EFFECTIVENESS OF SENSITIZING PROGRAMME ON CHEMOTHERAPY FOR CANCER PATIENTS UPON THE KNOWLEDGE AND PRACTICE OF NURSING STUDENTS

BY

G. MUTHURAM

A DISSERTATION SUBMITTED TO THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

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Approved by the Dissertation Committee on : _____

Research guide : _____

Dr. Latha Venkatesan,
M.Sc (N)., M.Phil (N)., Ph.D. (N).,
Ph.D (HDFS)., MBA (HM).
Principal cum Professor,
Apollo College of Nursing
Chennai-600095.

Clinical guide : _____

Dr. Lizy Sonia.A, M.Sc (N).,Ph.D.(N).
Vice Principal cum Professor
HOD, Medical Surgical Nursing ,
Apollo College of Nursing
Chennai-600095

Medical guide : _____

Dr.Naveen Ravel, MD.(Int Med), DM. (Med Oncology)
Senior Consultant Medical Oncology
Apollo Cancer Institute, Teynampet,
Chennai-600035

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness of Sensitizing Programme on Chemotherapy for Cancer Patients upon the Knowledge and Practice of Nursing Students"** is the outcome of the original research work undertaken and carried out by me under the guidance of **Dr. Latha Venkatesan, M.Sc.(N)., M.Phil.(N)., Ph.D.(N)., Ph.D.(HDFS)., MBA (HM)., Principal cum Professor,** Apollo College of Nursing and **Dr. Lizy Sonia. A, Ph.D.(N), Vice Principal, Professor cum Head of Medical Surgical Nursing Department**, Apollo College of Nursing, Chennai. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in this university or any other university.

G. MUTHURAM

M. Sc. (N) II YEAR

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SYNOPSIS

Statement of the Problem

A Pre-Experimental Study to Assess the Effectiveness of Sensitizing Program on Chemotherapy for Cancer Patients upon the Knowledge and Practice of Nursing Students at selected College of Nursing, Chennai.

Objectives of the Study

1. To assess the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
2. To determine the effectiveness of sensitizing program on chemotherapy for cancer patients upon the knowledge and practice of nursing students by comparing their pretest and posttest knowledge and posttest only practice scores.
3. To assess the level of acceptability regarding the sensitizing program on chemotherapy for cancer patients among the nursing students.
4. To find out the association between the selected background variables and the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
5. To find out the correlation between the knowledge and practice of nursing students on chemotherapy for cancer patients.

The conceptual framework for this study is based on “Imogene King’s Goal Attainment Model” (1989). A pre experimental one group pre-test and post-test for knowledge and practice posttest only design was used for this study. The study included 97 Nursing students selected by purposive sampling technique. The present study was conducted at Apollo College of Nursing, Chennai, Tamil Nadu. The variables of the study were knowledge and practice of nursing students on chemotherapy for cancer patients

(dependent variables) and sensitizing program regarding chemotherapy for cancer patients (independent variable).

An extensive review of literature and guidance by experts laid foundation to the development of demographic variable proforma of nursing students and structured knowledge questionnaire regarding chemotherapy for cancer patients. The data collection tools were validated and reliability was established. After two weeks of pilot study, then data collection for main study was conducted.

Pretest assessment was done which included the background variables, and the pretest level of knowledge on chemotherapy for cancer patients using structured knowledge questionnaire. The sensitizing programme on chemotherapy for cancer patients was conducted as two days programme. Demonstration on preparation, administration of chemotherapy drugs, monitoring the patient on chemotherapy, disposal of cytotoxic waste and nurses responsibility in caring the chemotherapy patients for B.Sc (N) III year students through power point presentation, lecture cum discussions, skill station with demonstration and return demonstrations done on 3rd January 2018. The posttest level of knowledge was assessed by structured questionnaire on 12th January 2018, level of practice was done on 16th January 2018 by OSCE (Objective Structured Clinical Examination) method. The level of acceptability was assessed on 17th January 2018 after the intervention. The data obtained was analyzed using descriptive and inferential statistics.

Major Findings of the Study

- Majority of the nursing students were aged between 18-20 years (69.1%) and all of them were females (100%), half of them were having more than Rs.10,000/- of family income per month (50.1%), most of them belonged to nuclear family

(83.5%), more than half of them were from urban area (53.6%) and majority of them studied in English medium (74.2%).

- In Pretest, majority of the nursing students had inadequate knowledge (71.1%) while posttest assessment result revealed, most of them had acquired moderately adequate level of knowledge regarding chemotherapy for cancer patients (93.8%).

- Majority of nursing students had adequate level of practice in posttest with regard to preparation(98.96%), administration of chemotherapy drugs (98.96%), Monitoring of the chemotherapy patients (94.84%), disposal of cytotoxic waste (97.9%) and Nurses responsibility in handling chemotherapy (87.62%). The majority of nursing students (78.35%) demonstrated overall adequate level of practice after the sensitizing program on Chemotherapy.

- Majority of nursing students had very high practice scores with regard to all aspects such as preparation (Mean = 44.08, SD = 2.45), administration (Mean = 9.57, SD = 0.73),monitoring (Mean = 9.33, SD = 1.11), disposal of cytotoxic waste (M = 9.43, SD = 0.80) and nursing responsibility in handling chemotherapy (Mean = 3.35, SD = 0.89). The students had very high total practice scores (M = 75.77, SD = 3.84) after the sensitizing program on Chemotherapy.

- The mean and standard deviation of the posttest knowledge scores regarding chemotherapy for cancer patients (Mean=18.10, SD =1.84) was high compared to the pretest knowledge scores (Mean =14.30, SD =2.78) among nursing students ($t = 10.54$ significant at $p<0.001$). Majority of nursing students had very high practice scores with regard to all aspects such as preparation (M = 44.08, SD = 2.45), administration (M = 9.57, SD = 0.73), monitoring (Mean = 9.33, SD =

1.11), disposal of waste (M = 9.43, SD = 0.80) and nurses responsibility in handling chemotherapy (M = 3.35, SD = 0.89). The students had very high practice scores (M = 75.77, SD = 3.84) after the sensitizing program on Chemotherapy.

Hence the null hypotheses **$H_0$1** stating that **"**There will be no significant difference between the pretest and posttest knowledge and practice scores regarding chemotherapy for cancer patients among the nursing students" was rejected.

- There was no significant association between selected background variables such as age, religion, educational qualification, type of family, family income and medium of education attending any programme and the level of knowledge regarding chemotherapy for cancer patients among the nursing students. There were no significant association between the level of practice such as age, medium of education in XII standard and level of practice of nursing students regarding chemotherapy for cancer patients ($p>0.05$). Hence the null hypotheses **$H_0$2** stating that "There will be no significant association between demographic variables and level of knowledge regarding chemotherapy for cancer patients among the nursing students" was retained.

- There was no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients. Hence the null hypotheses**$H_0$3** stating that "There is no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients" was retained.

Conclusion

Study findings revealed that the sensitizing programme was effective in improving the knowledge and practice of nursing students regarding chemotherapy for cancer patients. It underscores the need for empowering the nursing knowledge and practice by conducting such educational programme. This type of sensitizing program is widely used for evaluation of knowledge and practice among various groups of health care workers. Therefore, in this study the investigator had conducted the sensitizing programme to improve the knowledge and practice regarding the chemotherapy for cancer patients among nursing students.

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CHAPTER I

INTRODUCTION

Background of the Study

"Knowledge without Practice is Useless. Practice without Knowledge is Dangerous"

-Confucius

Health is an ideal state of physical and mental wellbeing: something to strive for but never to attain. Being healthy is very important to live happily and to run a family in good way. Severe illness or injuries can have a very detrimental effect on the family. In 2008, approximately 12.7 million cancers were diagnosed and 7.6 million people died due to cancer worldwide.

In 2012, there were 14 million new cases and 8.2 million cancer related deaths. The number of new cancer cases increases to 22 million in the next two decades. Worldwide cancer cases are projected to increase by 50% from 14 million to 21 million and cancer deaths increase to 60% from 8 million to 13 million from 2012 to 2030.The incidence of cancer in India is 70 – 90 per 100,000 population and the cancer prevalence is established to be about 2.5 million with over 800,000 new cases and 5,50,000 deaths occurring each year. (National Cancer Statistics, 2018).

Nurses are involved in caring for patients who are dying or have a terminal illness and are faced with the process of dying. Working with these patients and their families can be emotionally demanding and challenging. According to Birkholz et al. (2004) death is a personal issue for each nurse and each nurse's unique perspective can affect each patient who dies under the nurse's care. Although they are not among the care members of an oncology team, student nurses participate in giving care to cancer patients during their clinical training.

The treatment of cancer has undergone evolutionary changes as understanding of underlying biological process has increased. Continuous innovation and development in the vital fields have tremendous positive impact in the fight against cancer. Chemotherapy may be given alone or with other treatments. The patients receiving chemotherapy may have lot of side effects, some, or none at all. It depends on the type and amount of chemotherapy administered and how the body reacts. There are ways to prevent or control some side effects. Healthy cells usually recover after chemotherapy is over, so most side effects gradually go away.

Despite positive developments and innovations in cancer treatment in recent years, symptom control and quality of care for cancer patients remain challenging, and complications are frequent. In cases where even professional nurses experience difficulty in providing care to cancer patients, student nurses are typically unable to provide adequate care, and sometimes develop negative attitudes or behaviors toward this group of patients.

The International Council of Nurses stresses that the nurses' role is important when dealing with terminally ill patients in reducing suffering and improving the quality of life for patients and their families in the management of physical, social, psychological, spiritual and cultural needs.

A study conducted by Sadala and da Silva (2009) in Brazil with fourteen undergraduate nursing students, aimed to understand how they perceive themselves while caring for terminal cancer patients and exposed the meaning of the experience they had. Findings showed that informants perceived it as a painful experience that made them confront their weaknesses and insecurities. They were feeling insecure and weak due to lack of preparation and inexperience as well as lack of support from professionals during

their practical placement.The main objective being to help nursing students understand and interpret their experience.

Need for the Study

The cancer is the leading cause of death worldwide. Based on the Globocan (2012),about 12.7 million cancer cases and 7.6 million cancer deaths occurred in 2008. 56% of the cases and 64% of the deaths occurred in the economically developing world. It is estimated that about 9 million cancer cases are diagnosed every year.

The Globocan survey conducted in Punjab, from October to December 2012, has covered 2,64,84,434 people in 50,53,447 households in 12,603 villages and 217 cities and towns. This is 97.78 per cent of the population of the Census data. While 23,874 cases of people suffering from cancer have been detected, the numbers of persons complaining of cancer symptoms were 84,453. In Punjab, cancer registry programme in 2004-2005 found that whole Malwa region of a population of about 1.5 core, where ought to be about 12,000 cancer patients.

The landscape of cancer treatment has dramatically changed over last two decades. The age when surgery and radiotherapy were the only effective way to fight the tumor growth has ended. Depending on various factors, treatment options include surgery, radiation, immunotherapy, chemotherapy, hormone therapy, or targeted local therapy among others. The treatment plan will depend on the cancer type, the chemotherapy drugs used, the treatment goal, and how your body responds. Hence Nursing students and nurses need to have knowledge to handle the chemotherapy.

Huang et al (2010) in a descriptive qualitative study with 12 students in Taiwan explored the experiences of nursing students' encountering death during their clinical

practice. Nursing students expressed the need for teaching and receiving support at the moment of a patient's death and at the bereavement period that follows. Informants felt satisfied in relation to the knowledge and support gained from clinical mentors and nurses prior to patient's death.

Based on the studies mentioned above and also with the practical experiences, the researcher aimed to to explore the experiences of the undergraduate students when they come face-to-face with cancer care during their clinical placements. Hence a sensitizing program was developed for nursing students on chemotherapy for cancer patients.

Several studies in the literature have shown that student nurses have an almost equal fear of cancer and death as their patients. Therefore, in nursing education, it is important to train student nurses on how to form positive relations with cancer patients and their families as well as how to approach the emotional problems of patients concerning their ailments.

A number of studies recommend that nurses should be properly trained on cancer patient care and treatment, including communication, psychosocial support, and caring for terminal illnesses. Indeed, Sanford (2009). have shown that difficulties faced in communicating with cancer patients and their families were significant among student nurses practicing end of life care, and recommend that students be better trained to overcome such challenges.

As cancer has become more chronic in nature, nursing faculty and clinical educators must rethink how the education and clinical experiences of students must occur throughout the trajectory of a cancer illness. The literature also suggests that nurses working with cancer patients often feel inadequate and are under stress. Such feelings

may be brought about by communication difficulties with patients and their relatives, conflict with team members, or psychological difficulties due to coping with a patient's worsened state of health or death, all of which are common sources of stress and burnout. Based on the investigator observations in hospital settings and experiences as clinical instructor, believe that student nurses indeed have difficulty in working with cancer patients. Examining student experiences with cancer patients and identifying the problems, the sensitizing programme will help improve their preclinical training and provide better care for cancer patients.

The investigator while working with the cancer patients, identified that the nursing students during their clinical posting, expressed fear about the hazards due to chemotherapy drugs and hesitation to handle the patients who were on chemotherapy. Hence the investigator had an insight to sensitize the nursing students with the knowledge and practice on cancer and chemotherapy in order to prepare them for the future nursing role, this study was selected.

Statement of the Problem

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5. To find out the correlation between the knowledge and practice of nursing students on chemotherapy for cancer patients.

Conceptual and Operational Definitions

Effectiveness

Conceptual definition

Effectiveness is the degree to which something is successful in producing a desired result success. (Oxford English Dictionary, 2016)

Operational definition

In this study **e**ffectiveness refers to outcome occurring by sensitizing programme regarding chemotherapy for cancer patients among the nursing students, in terms of significant improvement in knowledge escore regarding chemotherapy for cancer patients as measured by comparing their pretest and posttest knowledge score.

Sensitizing Program

Conceptual definition

Sensitize means to make someone familiar with something. (English Dictionary). Program means a set of related measures or activities with a particular long term aim. (Oxford English Dictionary)

Operational definition

In this study sensitizing programme refers to a structured educational programme planned and designed by the investigator for the B.Sc Nursing III year students, to improve their knowledge related to Chemotherapy for Cancer Patients using AV Aids and power point presentations, lecture cum discussion methods, regarding basics about cancer, common type of cancers, treatment modalities of cancer, drugs used in cancer and handling of chemotherapy emphasizing on personal protective equipment while handling the drug, common side effects of the chemotherapy and nursing care of the patients undergoing chemotherapy.

Knowledge

Conceptual definition

Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.(Oxford English Dictionary, 2016)

Operational definition

In this study knowledge refers to awareness of information or level of understanding regarding chemotherapy for cancer patients among the nursing students studying in B.Sc. Nursing III year at selected college of nursing, as measured by structured knowledge questionnaire developed by investigator

Practice

Conceptual Definition

Practice refers to the actual application or use of an idea, belief or method, as opposed to theories relating to it. (Oxford English Dictionary, 2016)

Operational Definition

In this study Practice refers to the degree of compliance to the components developed related to the skills demonstrated by the nursing students on chemotherapy that includes preparation, administration, monitoring, disposal of chemotherapy waste and nursing responsibility as measured by the observation checklist developed by the investigator.

Nursing Students

Conceptual definition

A nursing student is a student in a post-secondary educational program that leads to certification and licensing to practice nursing. The title 'nursing student' usually applies to students enrolled in an RN or practical nurse program.

Operational definition

In this study they are referred as the students who were doing bachelor degree course in Nursing placed at the level of III year of the course.

Cancer Patients

Conceptual definition

Cancer patient is a person who is receiving medical treatment for a malignant growth or tumor. (English Dictionary)

Operational definition

In this study they are referred to as the patients who are diagnosed to have developed cancer in any of their body tissue as evidenced by their histopathology or biopsy report and undergoing chemotherapy.

Chemotherapy

Conceptual Definition

Chemotherapy is the term used for describing the treatment of disease by the use of chemical substances, especially the treatment of cancer by cytotoxic and other drugs.(English Dictionary).

Operational definition

In this study it is the treatment given for the cancer patients using a single or a combination of drugs and the procedures related to Preparation of Chemotherapy drugs, Administration of Chemotherapy drugs, Monitoring of Patient on Chemotherapy, Chemotherapy Waste disposal, and Nurses Responsibility in handling chemotherapy.

Null Hypotheses

$H_0$1 : There will be no significant difference between the pretest and posttest knowledge and practice scores of nursing students on chemotherapy for cancer patients.

$H_0$2: There will be no significant association between background variables and level of knowledge and practice of nursing students on chemotherapy for cancer patients.

$H_0$3: There will be no significant correlation between the posttest knowledge and practice of nursing students on chemotherapy for cancer patients.

Assumptions

An assumption is a principle accepted as being true based on logic or reason, without proof (Polit and Beck, 2012).

- The characteristics of the drugs that are used in chemotherapy have given rise to many issues, one of which is whether nurses are competent when working with chemotherapy.

- The level of knowledge, practice and capability of the nurse plays a crucial role in taking care of cancer patients.
- The nurses are responsible for the safe and timely administration of Intravenous chemotherapy drugs to the cancer patients and for the prevention of complication.
- Nurses should have adequate knowledge and competency in the field of chemotherapy
- The success of Intravenous chemotherapy depends on the knowledge and the competency of the nurses regarding the administration of chemotherapy
- Enlightening the nursing students with the knowledge and practice regarding chemotherapy for cancer patients, helps to lay a strong foundationof knowledge and practice for their future.

Delimitations

The study was delimited to

- Study period was limited for 6 weeks only.
- The study was limited to assess the knowledge and practice of nursing students.
- The study was limited to III year B.Sc. Nursing students.

Conceptual Framework

A framework is a group of concepts and set of population that spell out the relationship between them. Their overall purpose is to make scientific findings meaningful and generalized. The conceptual framework deals with inter related concepts that are assembled together in some rational schemes by virtue of their relevance to a common theme. (Polit and Beck, 2012).

The conceptual framework for the study is based on Imogene King's Goal Attainment Model (1989). The investigator has adopted this model for assessing knowledge and practice of nursing students on Chemotherapy for Cancer patients.

Perception

A person gets energy imparted from the environment and stores it. The conceptual framework of the present study involves the interaction between the investigator and nursing students, which includes perception and judgment on the part of the investigator as well as the nursing students.

The study assumes that nursing students as part of Health care provider. Thus the nursing students should have adequate knowledge on cancer and chemotherapy. Nursing students deliver better care to the cancer patients with the improved knowledge and practice by undergoing the sensitizing program on chemotherapy for cancer patients. When the knowledge improves, competency also improves and the nursing students will be able to handle the cancer patients who are on chemotherapy, with confidence.

Finally, the nursing students gained knowledge and practice through the sensitizing Programme regarding chemotherapy for cancer patients.

Judgment

In this study the investigator judges that the sensitizing program for nursing students on chemotherapy for cancer patients will be effective for the nursing students during their course.

Action

The investigator developed a questionnaire on knowledge and practice checklist for checking the knowledge and practice of nursing students upon the sensitizing Program on chemotherapy for cancer patients.

Reaction

Reaction refers to developed action on perceived choices for goal attainment. The action of both investigator and nursing students leads to reaction. The investigator organized to assess the knowledge and practice of the nursing students upon the sensitizing Program on chemotherapy for cancer patients through pre-test and post-test for disseminating the information.

Interaction

Interaction refers to verbal and nonverbal behavior between the individual and environment or investigator. It involves goal directed communication between the investigator and nursing students.

Transaction

Imogene King says that transaction is the mutually identified goals of two or more individuals and the means to achieve them. They reach an agreement about how to attain their goals and then set about to realize them.

The investigator and the nursing student have to mutually set goals in enhancing the knowledge and practice upon the sensitizing program on chemotherapy for cancer patients.

Feedback

The sensitizing program on the knowledge and practice of nursing students on chemotherapy for cancer patients made the students be confident in handling the cancer patients who are on chemotherapy. The improved knowledge and practice among the nursing students demonstrated the effectiveness of the program.

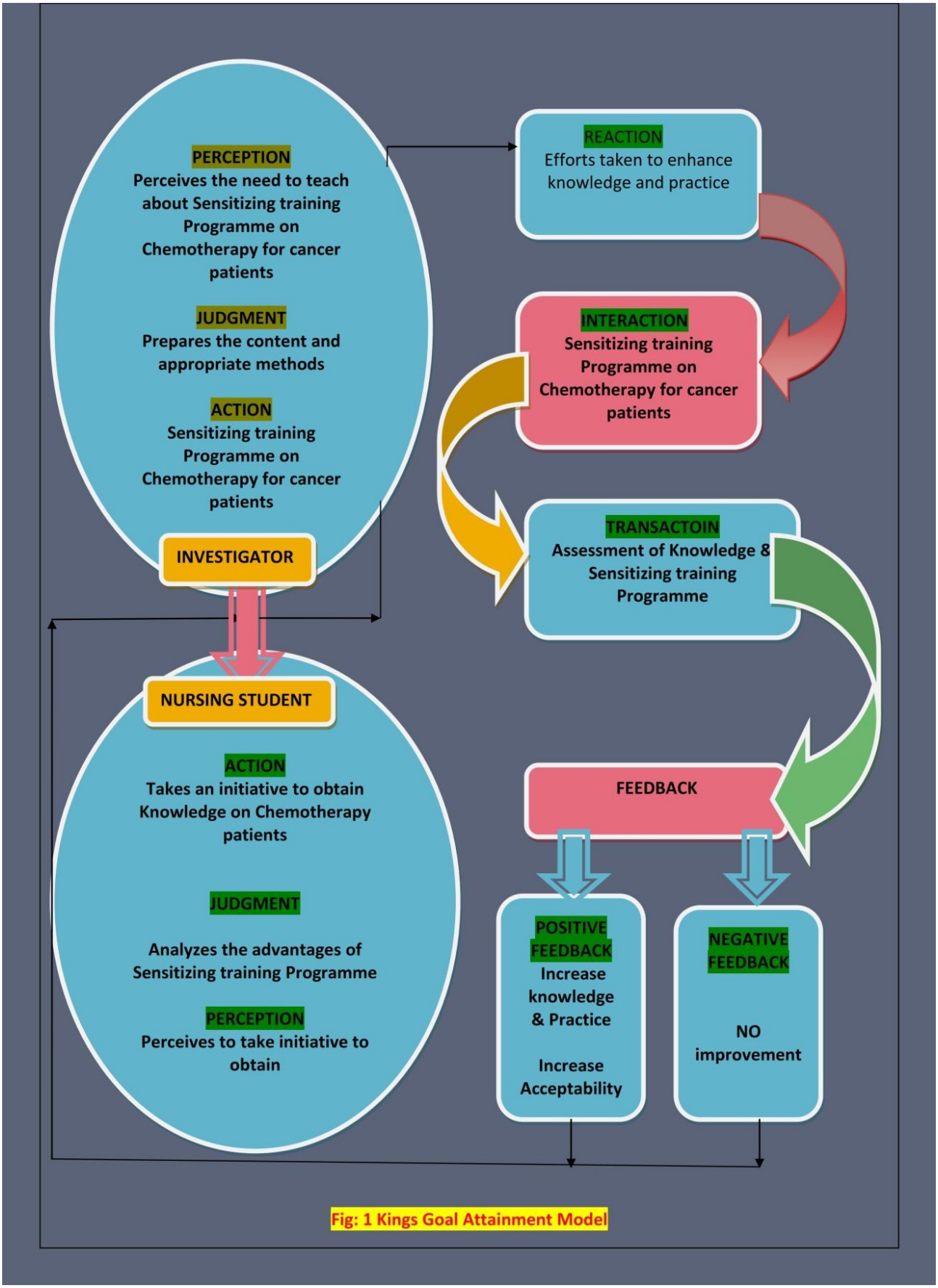


Figure.1. Conceptual Framework Based on Imogene Kings goal attainment theory

Projected outcome

The projected outcome may increase the level of knowledge and practice of nursing students regarding chemotherapy for cancer patients.

Summary

This chapter has dealt with the background, need for the study, statement of the problem, objectives, operational definitions, assumptions, hypothesis, delimitations and conceptual framework.

Organization of Report

Further aspect of the study is presented in following five chapters.

CHAPTER II : Review of literature

CHAPTER III : Research methodology includes research approach, research design, setting, populations, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

CHAPTER IV : Analysis and interpretation of data

CHAPTER V : Discussion

CHAPTER VI : Summary, conclusion, implications, recommendations and limitations

CHAPTER II

REVIEW OF LITERATURE

Review of literature helps the researcher to build on existing work he or she should understand what is already known as topic (Polit and Beck, 2016).

The task of reviewing literature involves the identification, selection, critical analysis and reporting of existing information on the topic of the interest. This chapter will deal a review of published studies, unpublished research studies and from related material for the present study. The review will help the researcher in building the foundation of the study.

The studies gathered through the extended review where grouped into

- Chemotherapy for Cancer
- Side effects of chemotherapy and personal protection
- Knowledge regarding chemotherapy for cancer
- Practice regarding handling of chemotherapy for cancer

Chemotherapy for Cancer

Karlou (2018), used a mixed-methods design, including a survey among 72 nurses in 7 oncology wards in 3 cancer hospitals in Attica, Greece, and a subsequent qualitative focus group investigation. Caring behaviors were explored through the Caring Behavior Inventory and content analysis of 3 focus group interviews. The results revealed 68.5% response rate and 18 nurses participated in the focus groups. Knowledge on skills (SD= 0.7) was the most important caring behaviors. No significant association with nurses' characteristics were noted, except for higher scores in caring behaviors in participants who were married (p= <0.02). The study concluded skills needed in equipping nurses to

provide holistic individualized care. These should be priorities for continuing education and practice improvement initiatives.

Lizy (2016) conducted an experimental study on the effectiveness of holistic nursing upon the knowledge and coping, QOL and compliance to therapeutic regimen among 102 myelosuppressed patients during their first course of chemotherapy using purposive sampling at tertiary care hospital. The results revealed that there was positive correlation between knowledge and coping 0.47, coping and quality of life 0.34 and quality of life and compliance 0.27 during posttest in the experimental group of patients with myelosuppression after holistic nursing intervention when compared to the control group significant at $p<0.05$.

Ashley (2011), conducted a prospective study on systems-focused clinical risk assessment among 8 nurse lead multi-disciplinary teams for improving the standard of chemotherapy administration in large urban hospitals in United Kingdom. It aims to identify and generate remedial structure to counteract errors occurring during chemotherapy administration. The process outcome revealed that nurses collectively improved the procedure of chemotherapy administration.

A descriptive study was conducted by Nirenberg (2010), to describe oncology nurses use of National Comprehensive Cancer Network Clinical Practice Guidelines for chemotherapy induced neutropenia and febrile neutropenia among 309 Oncology Nursing Society members. The findings gave an insight into workplace barriers to evidence based practices in various settings.

A randomized study was conducted by Oostendorp (2007), among 128 cancer patients, 45 were assigned to the control group and 83 to the intervention group in order

to evaluate the safety and efficacy of Decision Aids (DA).The results revealed that 63% were female, 73% had colorectal cancer 87% preferred treatment with chemotherapy and subsequently commenced treatment with chemotherapy (86%). DA was associated with stronger treatment preferences (3.0 vs. 2.5; p=0.030) and increased subjective knowledge (6.7 vs. 6.3; p=0.022). Objective knowledge, risk perception and perceived involvement were comparable between the groups.

Manias (2007), conducted a prospective study to determine how graduate nurses use protocols in their medication management activities. Twelve graduate nurses involved in direct patient care from a metropolitan teaching hospital participated in the study. The results of the study showed that graduate nurses adhered to protocols if they felt encouraged to make their own decision and if there was a decreased likelihood that disciplinary actions would be involved.

A prospective study on revised standards set by the Association of Paediatric Nurses (APON) was conducted by Bru (2004). Six standards referred to direct care of patient than family, direct care of child and family and a final standard referred to the nurse's professional responsibility to maintain expertise as a specialist or competency as a generalist.

Side Effects of Chemotherapy and Personal Protection

Kinsley and Pritchett presented a study on Liposomal Irinotecan (2018) Nursing Considerations in an Outpatient Cancer Center about recent approaches in treating pancreatic adenocarcinoma, include the use of liposomal Irinotecan as an option when first-line therapy has failed. Liposomal Irinotecan is a newer therapy requiring oncology nurses to obtain knowledge and skills for proper administrating, monitoring of hypersensitivity reactions during infusion, managing side effects, and providing patient

education. Nursing considerations when administering this drug include infusion time, premedication, risk for hypersensitivity reactions and adverse events, and side effects. The mean age of nurses was 33.60 ± 7.34 years and mean duration for oncology nursing experience was 2.65 ± 0.91 years.

Nurses had correct information about the importance of selecting peripheral venous catheter and choosing the placement area for chemotherapy administration (63.6%), control of catheter before the administration (93.9%), influence of chemotherapeutic agent on length of catheter (40.6%), and management of extravasation (75.7%). Nurses also had correct information about the first use of port catheter (67.3%) and checking the catheter whether it is working properly or not (75.8%).In General, nurses' level of knowledge related to catheter is 50% and higher. It is recommended to increase the knowledge of nurses about evidence-based information for catheter care as a step to safe chemotherapy practice.

Polovich and Clark (2012) conducted a cross-sectional study, among 165 nurses who were reported handling chemotherapy in oncology centres across the United States using mailed survey method. The purpose was to examine relationship among factors affecting nurses use of hazardous drugs, safe-handling precautions, identify the factors that promote over interfere with the hazardous drug precaution use and determine managers perspective on the use of hazardous drug safe handling precaution. The result showed that circumstances in the work place interfere with the nurses to use precaution during drug preparation.

In Turkey, Rizalar (2012), conducted a study among 73 nurses, to determine the safety measures on personal and environmental protection taken by nurses during chemotherapy preparation and administration. Data was obtained via questionnaire form.

The findings showed that nurses notwithstanding the rules and regulations pertaining to chemotherapeutics. The results clearly pointed out the importance of need for regular education programme and this study also revealed the necessity for improvement of the working environment.

Kim (2011), conducted a descriptive study among 220 Korean nurses from seven selected hospitals by using convenient snowball sampling technique to assess nurses' perception of medication error. The study revealed that developing strategies for drug administration and non-punitive reporting system reduces the medication error.

A total of 479 patients shared affirmative attitudes and overwhelmingly reported positive experiences with engaging safety behaviour in a study conducted by Schwappach (2011), in Switzerland to explore oncology nurses perceptions about involving patients in prevention of chemotherapy administration errors. In this study, nurses acknowledged the diverse need of patients and deliberately used different strategies to involve patients in safety of chemotherapy administration. To successfully involve patients in medication error prevention, clinicians need to address their patients' beliefs and reduce barriers through education.

One hundred and fifty-eight nurses participated in a descriptive study conducted in Georgia by Jones &Treiber (2010) to describe nurses perception about how and why medication errors occur and their personal experiences with medication errors. A survey was mailed to a random sample of 202 registered nurses among them 158 nurses admitted making medication errors. This study provided the perspective of front line nurses, contributed to the body of knowledge on medication errors.

Gan (2010), conducted a study in Japan regarding safety issues of chemo drug administration handling by nurses from an occupational exposure view point and through visualization with contrast media for ophthalmic vasculature. The results showed spills all over in the procedure by nurses in the study, specifically splash to environment around the drug preparation area, contamination of needles which were used for drug preparation, contamination of environment as a result of priming with chemo agent. So it is considered that strict conformity to chemo drug administration procedure based on authorization guidelines is very important in addition to the standard of administration procedure in each facility.

A descriptive study was conducted by Niff (2009), to review the standards set by oncology nursing society for chemotherapy administration. The investigator also invited broad range of stakeholders to set standards for chemotherapy administration, mainly to standardize care because standardization of care reduces the risk of errors, increase efficiency, and provide a framework for best practice.

Mahon (2009), conducted a descriptive study in St. Louis University Hospital to describe how 103 nurses from a local Oncology Nursing Society implemented Occupational Safety and Health Administration Guidelines for handling cytotoxic drugs in their individual practices and to identify barriers to implement these guidelines. To conclude, barriers must be overcome and better safe handling practices need to be incorporated to ensure the safety of nurses.

The standardized approach dramatically improved ordering, dispensing, and administration chemotherapy. Along with that multidisciplinary verification and documentation of dose and schedule, helped to reduce chemotherapy-related errors in a study conducted by Opfer (2008), for developing, implementing and documenting chemotherapy orders for patients in the acute-care setting in selected hospitals at Chicago.

A descriptive correlational study was conducted by Martin & Larson (2008) among 500 randomly selected members of the oncology nursing society who identified their work settings as office, clinic, or outpatient private practice. The aim of the study was to determine the current patterns of use of personal protective equipments among oncology nurses while handling anti-neoplastic chemotherapeutic agents in outpatient and office based settings. Findings revealed that use and availability of personal protective equipment when handling chemotherapy have increased, but medical monitoring of exposed employees are still neither widely practiced nor consistent with occupational safety and health administration guidelines.

Maree and Potgieter (2007) conducted a qualitative study using purposive sampling was conducted to describe the perspectives and experiences of 11 South African nurses caring for patients receiving palliative chemotherapy. In-depth interviews were conducted, participants experienced palliative chemotherapy positively, especially when an improvement in the patients' quality of life or pain relief was evident. Fatigue was highlighted as the major side effect. For them, the improvement in pain and quality of life outweighed the side effects the patients experienced. The positive attitude patients upheld while receiving this treatment encouraged them. Nurses should gain more knowledge about the meaning, people living with advanced cancer, attach to hope to prevent them from interpreting patients' hope as denial and false.

Knowledge Regarding Chemotherapy for Cancer

AlQadire (2018), conducted a cross-sectional design to survey 229 nurses working in oncology units in three hospitals. Most participants were female (62.9%) between age of 21-55 years, with a mean age of 29.9 years (SD=6.2). The mean overall knowledge score was low at 4.7 (SD=3.5) (95% CI=4.40-5.01). Poor knowledge of Care in Nausea

and vomiting (CINV), assessment and management were noted. The study concludes that Oncology nurses' knowledge about the assessment and management of CINV is inadequate, and improvements in knowledge are needed. An educational intervention is recommended, which needs to be tested to ensure that it is both effective and feasible to provide.

A study by Lavanya (2017), among nurses comprising of 15 staff nurses and 15 nursing students to assess knowledge regarding care of patients with chemotherapy . The study revealed that the level of knowledge among staff nurses, 9(60%) had inadequate knowledge, 4 (27%) had moderate knowledge and 2(13%) had adequate knowledge. Among nursing students, 13(87%) had inadequate knowledge, 2(13%) had moderate knowledge and none of them had adequate knowledge regarding chemotherapy. The study concluded that staff nurses had better knowledge than nursing students on care of Patients with Chemotherapy.

Supportive care from nurses and other health care professionals should accompany cancer treatment. The goal is to relieve pain, other symptoms and to maintain general health and improve quality of life and provide emotional, psychological and logical support to patients and other families. Hence their need for effective understanding regarding the management of patients with cancer among the nurses. Health care professionals need to be sensitized and motivated regarding adverse drug reactions (ADR) reporting. Many a times, nurses, being the first contact with patients throughout the day, also need to be sensitized regarding the reporting culture. They observe the effects and adverse reactions of medicines after implementation and take interventions accordingly.

Professional nurses are described as knowledgeable and competent; they know what they are doing and convey their professional knowledge by explaining things. Nurses also know about specialized cancer concerns. Professional knowledge can be demonstrated by showing technical competence in starting IV lines, timing chemotherapy drips, and giving useful answers to patients' questions.

Patients also identified competency in vein puncture as an aspect of effective nursing care. Other aspects included providing pain relief or comfort, watching patients closely, and checking whether patients were comfortable (Larrabe & Bolden, 2001). Professional knowledge is important for earning patients' trust. Trust is identified as a chief value in the nurse-patient relationship and has been described by patients as important for their well-being. When trust is established, patients feel confident, safe, and less vigilant.

A non experimental descriptive research design was conducted by Virinder Singh Chowdhary (2016) with Structured self-administered questionnaire schedule to assess the knowledge on 50 staff nurses of convenience sampling technique from cancer hospitals of Punjab. The results of the study shown that mean score of staff nurses regarding knowledge was average (14.94) and mean score of their attitude comes out to be positive (59.70). The association between knowledge and attitude with their selected socio-background variables was calculated by chi square test and revealed statistically no significant relationship ($p>0.05$). The intention of this study was to assess the knowledge and attitude of nurses' on nursing care of cancer patients undergoing chemotherapy. Overall, nurses appear to have average knowledge and a positive attitude towards nursing care of cancer patients undergoing chemotherapy. So enhancement in knowledge aspects is required and CNE program me or knowledge updating program me should be held time to time.

Rajvinder Kaur (2016) conducted quasi-experimental, one group pretest posttest design among parents of children receiving chemotherapy and the sample in the study were 51 parents of children receiving chemotherapy at cancer research institute at Himalayan hospital. Structured teaching programme in the form of intervention was administered on the 7th day posttest was done by using same tool. The result was mean post-test knowledge score of parents is 22.45 ± 1.73 which was significantly higher than the pretest knowledge score 16.21 ± 1.99 there was a significant improvement in the knowledge of parents regarding home management of side effects of chemotherapy. The calculated 't' value was 17.37 which is more than the table value 2.009 significant at $p<0.05$. The study concluded that the structured teaching programme on home management of side effects of chemotherapy was effective in increasing knowledge of parents.

A descriptive study was conducted by Kapucu (2015), to determine the knowledge levels of 165 oncology nurses about peripheral and central venous catheter during their chemotherapy administration using a structured knowledge questionnaire and socio background variable proforma e-mailed to the members of Turkish Oncology Nursing Society. The data revealed that the mean age of nurses was 33.60 ± 7.34 years and mean duration for oncology nursing experience was 2.65 ± 0.91 years. Nurses had correct information about the importance of selecting peripheral venous catheter and choosing the placement area for chemotherapy administration (63.6%), control of catheter before the administration (93.9%), influence of chemotherapeutic agent on length of catheter (40.6%), and management of extravasation (75.7%).

Nurses also had correct information about the first use of port catheter (67.3%) and checking the catheter whether it is working properly or not (75.8%). This study

concludes that, nurses' level of knowledge related to catheter was 50% and higher. Hence evidence-based information for catheter care as a step to safe chemotherapy practice is recommended to increase the knowledge of nurses.

A cross-sectional, observational study by Timmers (2014),among Health Care Professionals (HCPs) in haemato-oncology settings in Belgium and the Netherlands using a composite questionnaire that comprises total of 47 care activities listed and categorized into eight domains. 208 HCPs were also asked about their perceptions of adherence management on the items classified as insight into adherence, patients' communication, capability to influence, knowledge of consequences and insight into causes. Validated questionnaires were used to assess beliefs about medication (BMQ) and shared decision making (SDM-Q-doc). Enhancing the awareness and perceptions of medication adherence management of HCPs is likely to have a positive effect on care quality. Care can be improved by addressing medication adherence more directly by questioning patients about barriers and discussing strategies to overcome them, by asking for missed doses and offering electronic reminders to support long-term medication.

Yu HY (2013), conducted a descriptive study among 203 nurses on knowledge of chemotherapy by using a structured questionnaire. The results revealed that there was an overall correct answer rate of 60.9%. Most of the respondents, 63.5%, had a score of less than 70, and 77.3% hoped to undergo more training on chemotherapy. Their knowledge of chemotherapy came mainly from consultation with colleagues (4.0 ± 0.8) and in-hospital continuing education (3.9 ± 0.8). The evidence-based results suggested that nurses have insufficient knowledge about chemotherapy, however, nurses need more education about chemotherapy in nursing school and through in-hospital continuing education.

Cunningham (2013), conducted a study in London to explore student's perceptions of their experience with cancer patients using a self-report questionnaire among 152 pre-registration students enrolled on diploma / degree nursing programme and follow up interviews with nine students. The majority of the informants (84.9%) described their experience as positive while the student's perceptions of their confidence in practice (62.2%) were described as less positive. Similar data were reported in relation to their preparation for their required nursing skills (53.9%) as well as the amount of theory provided about cancer care before the clinical placements (38.2%). Student nurses claimed that they were not feeling comfortable as far as their education of communicating and supporting cancer patients. However, 93.3% of the informants were able to reflect on their nursing practice, 88% stated that they were feeling accepted as a team member whereas 81, 6% stated that they were being supported by their mentors in applying theory and practice.

Gibson (2012), conducted a descriptive study to explore the knowledge, attitude and beliefs of nurses who administer chemotherapy to children and young people, 286 nurses were the samples of study. The study showed that nurses new to chemotherapy administration were initially anxious about their role and due to their anxious state makes drug error. Education and support from colleagues appears to have had a positive effect on reducing worry and increasing competence.

Brown (2010), conducted a prospective study to assess the value of oncology nursing certification. A total of 940 Oncology nurses participated and completed a background survey and the perceived value of certification tool. Most were Caucasian women. 36% were staff nurses.19% were nurse managers and 10% were advance practice nurses. A high value of certification was reported. Both certified and non-certified nurse's

valued certification. Increasing institutional reorganization and financial support could improve nurses' certification rates and ultimately result in improved patient care.

The inpatient oncology staff of St Elisabeth's hospital in Boston by Creaton et al (2009). The programme consist of theoretical and practical component in which in-patient oncology nursing staffs were highly motivated to expand their knowledge base for cancer patient care and expressed interest in chemotherapy administration.

Verity (2008) conducted a descriptive study to explore the work of nurses who administer chemotherapy. The study was conducted across 26 London hospitals providing cancer services.244 nurses were the study participants, the findings highlighted the value of formal educational preparation in chemotherapy prior to undertaking the aspect of nursing. The result reinforced that coordinated education and training strategy for chemotherapy practice is warranted to underpin safe and effective practice in this area.

Practice regarding handling of chemotherapy for cancer

An interventional study by Keat (2013), on 96 nurses, to assess the change of nurses` safety-related knowledge as well as attitude levels and subsequently to assess the change of cytotoxic drug handling practices in wards after a series of pharmacist-based interventions with a before and after design consisting of the initiation of closed-system cytotoxic drug reconstitution (CDR) services, courses, training workshops and guideline updates. The study revealed that the interventions improved the knowledge, attitude and safe practices of nurses in cytotoxic drug handling.

Guiyun Zhou(2010), conducted a cross sectional study, yielded a five-factor solution for improving the attitudes and practice behavior portions with internal consistency using Cronbach alpha regarding advanced care planning, respondents were

moderately knowledgeable, but their advanced care planning practice was not routine. This study emphasized on Validly assessing oncology Advanced Practitioners in nurses' knowledge, attitudes, and practice behaviors regarding advanced care planning which will enable more tailored approaches to improve end-of-life care outcomes. Therefore, nursing students who are future nurses need to be empowered on their role in handling chemotherapy and side effects, hence this study was undertaken to assess the effectiveness of the sensitizing programme regarding chemotherapy for cancer patients among nursing students.

Alka Saxena (2006) conducted a study among the nursing personnel to evaluate the effectiveness of planned teaching programme regarding knowledge, attitude and practice on cancer chemotherapy and management of side-effects. The study found the level of knowledge of the respondents on side-effects of chemotherapy was not up to expectation, and emphasized that the nursing personnel working in cancer hospitals need to provide supportive and educative services.

Summary

This chapter deals with the review of literature related to the problem stated. It also enabled the researcher to design the study, develop the tool and plan the data collection procedure to analyze the data. Twenty studies were reviewed from twenty primary sources.

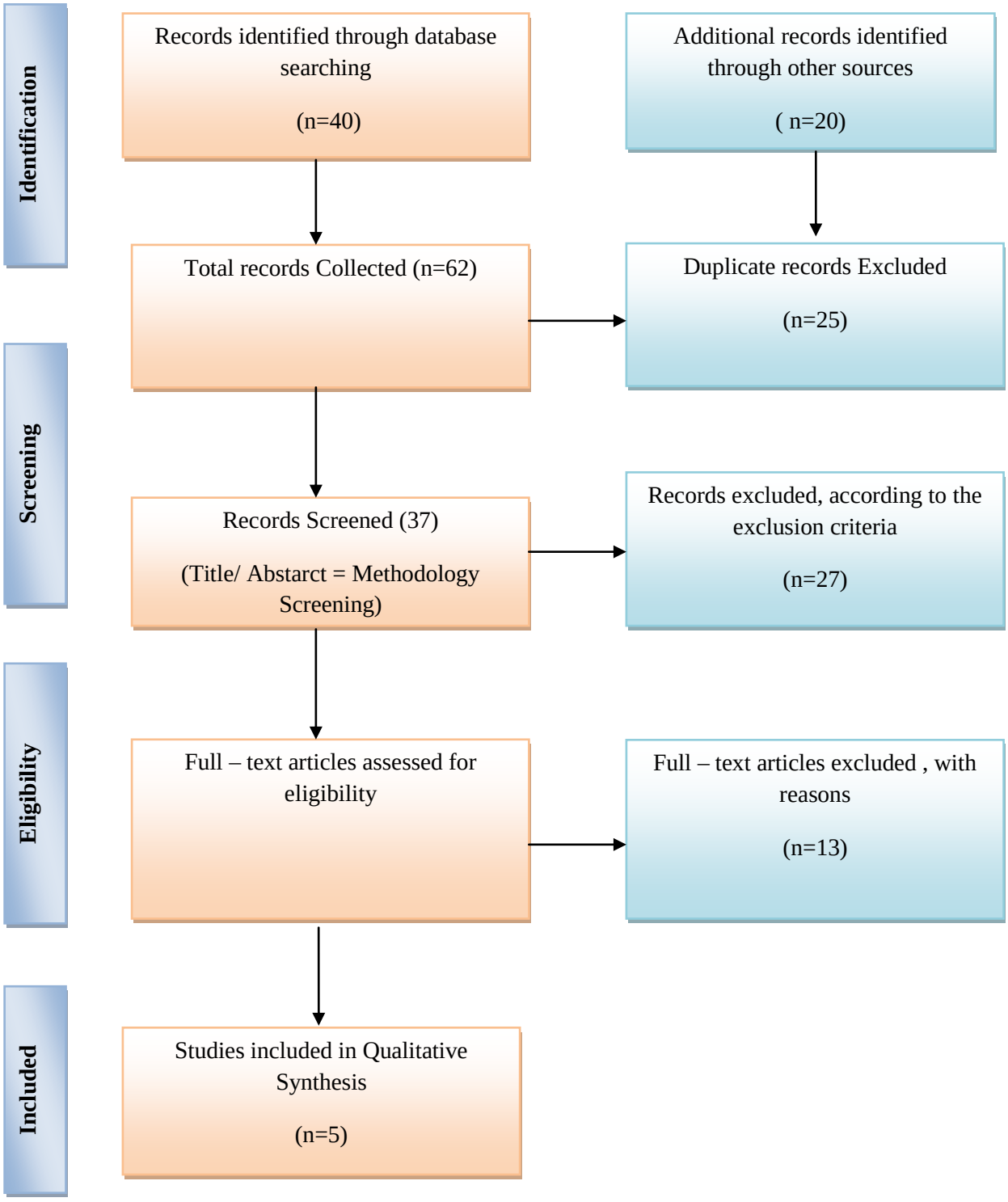


Fig.2. PRISMA flow diagram

EBP Question: Is the sensitizing programme on chemotherapy is effective to improve the knowledge and practice of nurses?

Table.1. Individual Evidence Summary of Pre-Experimental study based on effectiveness of sensitizing programme upon the knowledge and Practice of nursing students on Chemotherapy for Cancer Patients.

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
1.	Abhishek Pathak et al (2018)	**Title -**Capsule course to Assess the Knowledge, Attitude and Practice of Paramedical Staff Towards Chemotherapy Drugs and their Administration in a Tertiary Cancer Care Center of India **Objective** – To ascertain the knowledge, attitude and practice (KAP) of the Para Medical Staff (PMS) to the chemotherapy drugs and the effect of capsule course on	Sample - Para Medical Staff Sample Size - 100 Para Medical Staff. Setting and Tool - A multiple-choice questionnaire, which included ten questions about knowledge, ten questions about practice and five questions about attitude, was prepared. Baseline KAP was determined by giving questionnaire to 100 PMS. Then a capsule course was	The result of knowledge questionnaire was 60%, which improved to 89%, attitude improved from 55% to 80.2% and practice improved from 61% to 87.5% after these capsule courses after 24 months. This improvement in the knowledge was due to 8 sessions of the 3 monthly courses which were conducted. This was an on-job training for the PMS. Each candidate underwent 8 such courses within a period of 24 months.There was a definitive lack of awareness which was tested on the basis of KAP questionnaire and there was a definitive improvement in the knowledge and care for patients after the	Level II Pre Experimental Study

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
		the same. PMS are the main set of health care worker who supplement and support the physicians or oncologists but are not specially trained or qualified as nurses.	conducted by medical, radiation and surgical oncologists. Re-evaluation was done to assess change in KAP every three monthly. All PMS were addressed in small groups of 25 each. The data gathering process continued till the required number of samples was achieved. The data collected was analyzed in terms of percentage	capsule course.	
2.	Rajvinder Kauret al. (2017)	**Title -**A Study to Assess the Effectiveness of Structured Teaching Program on Knowledge Regarding“	Samples – 2,055 Oncology Nursing Society members completed an emailed survey.	The mean post-test knowledge score of parents is 22.45 ± 1.73 which was significantly higher than the pretest knowledge score 16.21 ± 1.99 there was a	Level II Quasi experimental study

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
		Home Management of Side Effects of Chemotherapy" among Parents **Objective**-The first objective of the study is to determine effectiveness of structured teaching programme on knowledge regarding home management of side effects of chemotherapy among parents. The second objective of the study is to find association between the pretest knowledge levels of parents with selected background variables.	Sample size –51 parents of Oncology paediatric patients. Setting- Home Care setting Method – Quantitative research approach with Quasi experimental study and collected the data by using tool 1-(background variables) and tool-2 (structured knowledge questionnaire) interview schedule. Same day structured teaching programme was given in the form of intervention. On the 7th day posttest was done by using same tool..	significant improvement in the knowledge of parents regarding home management of side effects of chemotherapy. Paired 't' test was calculated to find the significant difference between means of pretest and posttest knowledge scores. The calculated 't' value was 17.37 which is more than the table value 2.009. (df=50 at $p<0.05$). Chi-square test was performed to find association, only one variable relation with child was significant. It was concluded that the structured teaching programme on home management of side effects of chemotherapy was effective in increasing knowledge of parents.	

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
3	Lawanya (2017)	**Title:** Knowledge regarding care of patients with chemotherapy among staff nurses and nursing students Design: A quantitative approach with descriptive design **Objective:**1. To assess the level of knowledge regarding care of patients with chemotherapy among staff nurses and nursing students. 2. To compare the level of knowledge between staff nurses and nursing students. 3. To find out the association between level of	Sample: 15 Staff nurses and 15 nursing students Sample Size: 30 Setting: Non Probability sampling Method: A quantitative approach with descriptive design	Study revealed that the level of knowledge among staff nurses, 9(60%) had inadequate knowledge, 4 (27%) had moderate knowledge and 2(13%) had adequate knowledge. Among nursing students, 13(87%) had inadequate knowledge, 2(13%) had moderate knowledge and none of them had adequate knowledge regarding chemotherapy. Conclusion: The study concluded that staff nurses had better knowledge than nursing students on Care of Patients with Chemotherapy. Keywords: knowledge, patients, chemotherapy, staff nurses, nursing	Level III Descriptive study

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
		knowledge regarding care of patients with chemotherapy among staff nurses and nursing students with their selected socio- background variables.			
4.	Yu HY (2013)	**Title:** Evaluating nurses' knowledge of chemotherapy. **Objective:** To assess whether nurses are competent when working with chemotherapy.	Sample: Nurses Sample size: 203 nurses Tool: Nurses' knowledge of chemotherapy was evaluated with a questionnaire that included 20 true-or-false questions. The questionnaire was developed from literature and expert input and validated by subject	The study revealed that total of 203 nurses participated in the study and achieved an average overall correct answer rate of 60.9%. Most of the respondents, 63.5% (129 of 203), had a score of less than 70, and 77.3% (157 of 203) hoped to undergo more training on chemotherapy. Their knowledge of chemotherapy came mainly from consultation with colleagues (4.0 ± 0.8) and in-hospital continuing education (3.9 ± 0.8).	Level II Pre experimental study

Article No	Author & Date	Title / Objective	Sample, Sample Size, Setting and tool used	Study findings that help answer the EBP question	Evidence Level & Quality
			experts (content validity). A pilot study (contrasted-groups approach) was also conducted.	The evidence-based results suggested that nurses have insufficient knowledge about chemotherapy. More fundamentally, however, nurses need more education about chemotherapy in nursing school and through in-hospital continuing education.	

There were 4 evidences on the topic, found appropriate for individual evidence summary and they were tabulated. All of the evidences belong to level I, II and level IV which is coming under evidence type, randomized controlled trial, cross sectional study and systematic review.

CHAPTER III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the data are gathered in order to answer the question and to analyze the research problem. It enables the investigator to project a blueprint of the research undertaken. The research methodology involves the systematic procedure by which the investigator starts from the time of initial identification of the problem to its conclusion.

This chapter deals with a brief description of different steps undertaken by the investigator for the study. It includes research approach, research design, the setting, population, sample and sampling technique, sampling criteria, selection and development of the instruments, validity and reliability of the instruments, pilot study, data collection procedure and plan for data analysis. The present study was conducted to assess the effectiveness of sensitizing programme on chemotherapy for cancer patients upon the knowledge and practice of nursing students.

Research Approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study for which it is undertaken.

To accomplish the objectives of the study, an experimental study approach was used as the investigator assessed the effectiveness of sensitizing programme regarding chemotherapy for cancer patients upon knowledge and practice of nursing students.

Research Design

The research design is the plan, structure and strategy of investigations answering the research question. It is the overall blue print for the investigator to select and carry out the study. A research design incorporated the most important methodological design that an investigator works in conducting a research study (Polit& Beck 2016). It helps the investigator in the selection of the subjects, observation, and type of statistical method to be used to interpret the data.

The research design used in this study was a pre experimental one-group pre-test-post-test research design. It fulfills the criteria such as manipulation without randomization and control.

The research design is represented diagrammatically as follows-

Knowledge **O1 X O2**

Practice **X O2**

O1 -Pre-test assessment of knowledge regarding chemotherapy for cancer patients among nursing students

X -Sensitizing training Programme, a self-structured educational Programme which includes power point presentation, lecture cum discussion and demonstration as two days session conducted to the selected nursing students

O2 -Post-test assessment of level of knowledge and practice of Nursing students on chemotherapy for cancer patients.

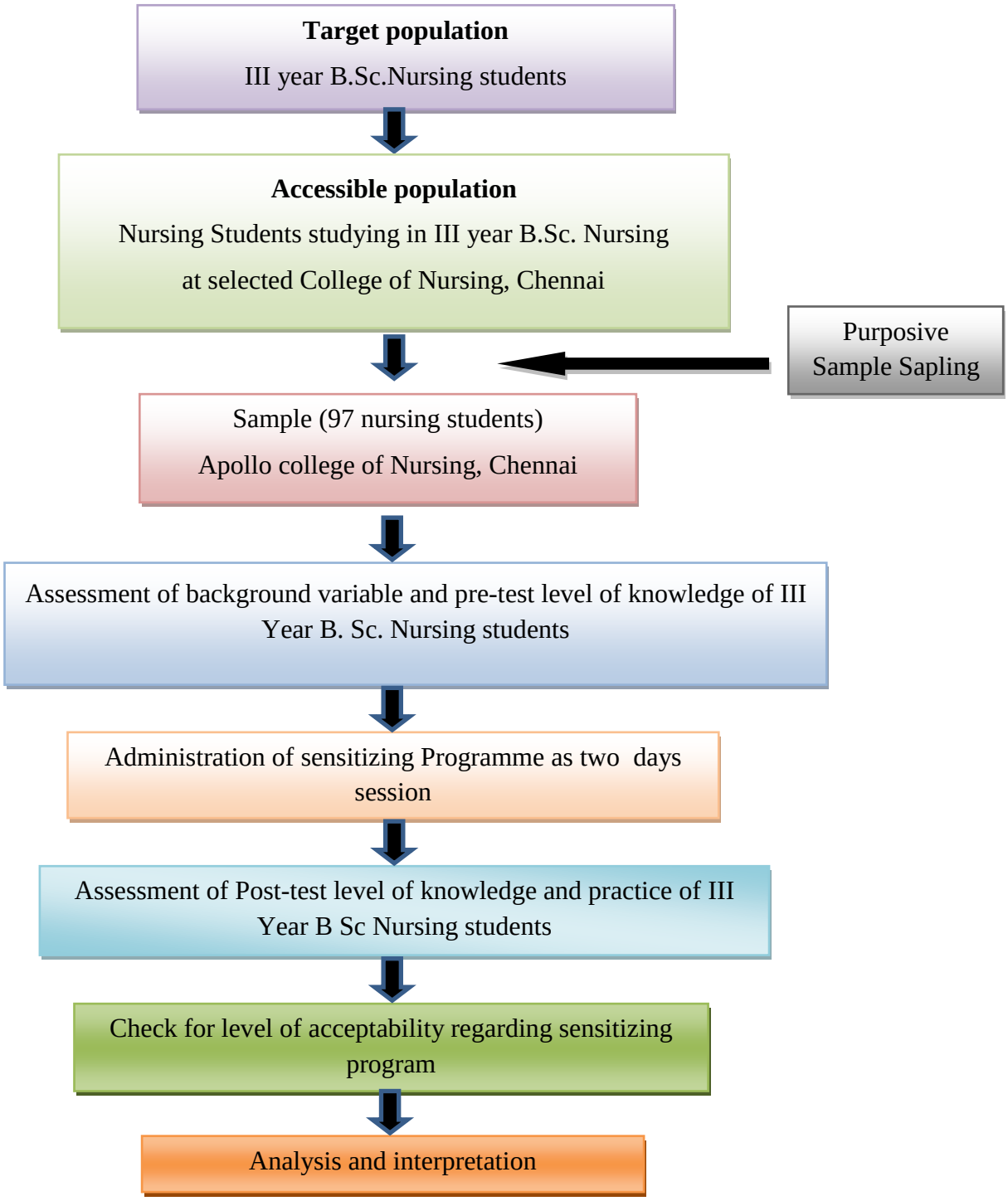


Fig 3: Schematic Presentation of Research Design Variables

A variable is an attribute that varies on different values when form, time to time or person to person.

Independent Variable

It is the variable hypothesized to the outcome variable of interest. In this study the independent variable is effectiveness of sensitizing programme on chemotherapy for cancer patients for nursing students

Dependent Variables

It is the variable hypothesized to depend on or to be caused by another variable. In this study dependent variable is knowledge and practice of nursing students on chemotherapy for cancer patients.

Attribute variables

These are background variables of nursing students which includes information on age, medium of study, religion and level of academic performance at twelfth standard.

Research Setting

Polit and Back (2016) stated that it is the physical location and condition in which data collection takes place in a study. The study was conducted in Apollo College of Nursing, Chennai, Tamilnadu.

Apollo College of Nursing is situated in Chennai in Tamil Nadu state of India. Established in 1996, it is accredited from Indian Nursing Council (INC) and it is affiliated to Tamil Nadu Dr. M.G.R. Medical University. Apollo College of Nursing, Chennai offers 2 courses across 1 streams namely Nursing and across 2 degrees like B.Sc. Nursing, M.Sc. Nursing and other courses offered are PG Diploma Nursing in Oncology, Critical care nursing, Operation Theatre Nursing, Emergency and Disaster Nursing,

Neurology Nursing and Neonatal Nursing. The College also prepares from graduates to Ph. D level.

Population

Population is the entire aggregation of cases which meet designed criteria.

Target population

Target population is the group population that the researcher aims to study and to whom the study findings will be generalized. In this study, the target population comprises all B.Sc. Nursing students.

Accessible population

It is the group that investigator finds in the study area. In this study they are the B.Sc. Nursing students placed in III year at selected college of nursing.

Sample

Sample consists of subset of units that comprise the population (Polit& Beck 2016).

Sample size

A sample size of 97 nursing students who meet the inclusion criteria was chosen for the study. There were hundred students in the class among which 3 were on leave during the data collection.

Sampling technique

Polit& Beck (2016) stated that sampling refers to the process of selecting a portion of the population to represent the entire population. Setting is chosen based on the availability of samples. Purposive sampling technique was used to select samples from the selected College of Nursing.

Sampling criteria

The study samples included the nursing students studying in III year, B.Sc. Nursing.

Inclusion criteria

- Who were studying in third year B.Sc. Nursing.
- Willing to participate.
- Present during the study.

Exclusion Criteria

Nursing Students who are not willing to participate in the study.

Selection & Development of Study Instruments

The data collection instruments were selected through an extensive review of literature and in conclusion with experts and considering the views of faculty members.

The following instruments were used in this study

- Background variable proforma of nursing students.
- Structured questionnaire for assessing the level of knowledge of nursing students on chemotherapy for cancer patients.
- Observation checklist for assessing the level of practice of nursing students in Handling Chemotherapy for Cancer Patients.
- Rating scale to assess the level of acceptability among the nursing students upon the sensitizing program on chemotherapy for cancer patients.

Background Variable Proforma of Nursing Students

The background variable proforma consists of ae, religion, income, type of family, and medium of instruction at XII Standard among the selected nursing students studying in III year B.Sc. Nursing.

Structured Questionnaire for Assessing the Knowledge of Nursing Students on Chemotherapy for Cancer Patients

Structured knowledge questionnaire was developed by the investigator to assess the knowledge regarding chemotherapy for cancer patients. It consists of 30 MCQ items. Each item consists of 4 options- one right option and 3 wrong options. Items are related to basics of cancer and chemotherapy, such as Common cancers, investigations, types of cancer, routes of chemotherapy and common effects of chemotherapy. Each correct option scores 1 and wrong option carries 0. Hence the obtainable score is 0-30. Total obtained score for 30 items was converted to percentage and the converted percentage was interpreted as follows.

Score	Percentage	Interpretation
≥15	Below 50	Inadequate
16-22	50-74	Moderately adequate
23-30	75-100	Adequate

Observation Checklist to Assess the Level of Practice of Nursing Students on Chemotherapy for cancer patients

Observation practice checklist developed by the investigator to assess the practice of nursing student on chemotherapy that includes preparation, administration, monitoring, disposal of chemo waste and nursing responsibility. It consists of 40 items. Items were

related to Preparation of Chemotherapy drugs, Administration of Chemotherapy drugs, Monitoring of Patient on Chemotherapy, Chemotherapy Waste disposal, and Nursing Responsibility in handling chemotherapy. If the nursing student performs all the respective items (√) scores will be given as 2 for Performed, 1 for Partially performed, 0 for Not performed. Total marks scored for 40items are converted to percentage and the converted percentage is interpreted as the follows

Score	**Percentage**	**Interpretation**
> 30	>75%	Adequate practice
20 -30	50% -75%	Moderate practice
< 20	<50%	Inadequate practice

Rating Scale for assessing the Level of Acceptance by Nursing Students regarding Sensitizing Programme on Chemotherapy for Cancer Patients

Rating scale was designed to assess the level of acceptance among nurses regarding sensitizing program on chemotherapy for cancer patients upon the knowledge of nursing students. It is 10 items scale and rated on 3-point rating scale as rated as3- Highly acceptable,2- Acceptable, 1- Unacceptable. Total scores for 30 items are converted to percentage and is interpreted as the following:

Score	**Percentage**	**Interpretation**
≥15	Below 50	Unacceptable
16-22	50-74	Acceptable
23-30	75-100	Highly acceptable

Validity of the instruments

Content validity is the degree to which an instrument measures what it is intended to measure. Content validity is the sampling adequacy of the content being measured. (Polit& Beck, 2012).

Content validity of the tool was obtained from experts in the field of nursing and clinician. Based on their suggestions the investigator modified the item and finalized the tool for study.

Reliability of instruments

Reliability of instruments refers to the accuracy and consistency of the measuring tool. It refers to the extent to which the same results are obtained on repeated administration of the instrument. Knowledge and practice as component, method of Test Retest Reliability, r = 0.85

Intervention protocol

The sensitizing program is the educational programme given for the nursing students studying in selected College of Nursing in Tamil Nadu, as two days training regarding knowledge and practice on chemotherapy for cancer patients which consists of basics about cancer, common type of cancers, treatment modalities of cancer, drugs used in cancer and handling of chemotherapy emphasizing on personal protective equipment while handling the drug, common side effects of the chemotherapy and nursing care of the patients undergoing chemotherapy. The sensitizing program was conducted by using power point presentation, lecture and demonstration. After 7days the investigator assessed the level of knowledge and practice of nursing students regarding chemotherapy for cancer patients.

Pilot study

According to (Polit& Beck, 2012) stated that pilot study is the miniature of actual study, in which the instruments are administered to the subject drawn from the same population. Pilot study was conducted on a sample comprising of at least 10% population for the main study. The pilot study established the feasibility and researchability of the study.

Protection of Human Rights

- Permission was obtained from the Principal, Apollo College of Nursing, Chennai.
- The study was conducted after obtaining approval from Ethical Committee, Apollo College of Nursing, Chennai.
- The participants were given explanation of the study and written consent was obtained from them.
- Confidentiality of the data was maintained throughout the study.
- Debriefing was done after the intervention.

Data Collection Procedure

Data collection is the process of gathering information needed to address a research problem.

After obtaining permission from Principal of the college,97 samples were selected by using purposive sampling technique, at Apollo college of nursing in Chennai, Tamil Nadu, who met inclusion exclusion criteria among nursing students in selected College.

After initial introduction the investigator obtained consent from the students to participate in the study. Data was collected for a total period of 4 weeks from selected samples. The pre-test knowledge on effectiveness of sensitizing program on knowledge

and practice upon chemotherapy for cancer patients among the nursing students were measured for all the samples by using the tools developed by the investigator such as background variable tool proforma, structured knowledge questionnaire and observation checklist for assessing practice. Investigator had assessed the pre-test level of knowledge on 1st day by administering structured knowledge questionnaire followed by sensitizing programme was administered for two days as lecture and demonstration. Post-test was conducted after 1 week by the investigator to assess the level of knowledge and practice regarding effectiveness of training program for nursing students' level of acceptability. The data collection was done from 1st January 2018 to 21st January 2018.

Problems Faced During Data Collection

- All the students in B.Sc Nursing III Year were not included as three students were on leave.

Plan for Data Analysis

Data was analyzed by using descriptive (Frequency, percentage, mean, standard deviation) and inferential statistics.

Table 2 : Plan for Data Analysis

Statistics	Method	Purpose
Descriptive	Frequency(n)&Percentage(%) distribution	• To describe the Background Variables of nursing students • To describe Level of knowledge and practice on chemotherapy for cancer patients among the nursing students

	Mean(M) and Standard Deviation(SD)	• To describe pretest and posttest knowledge and practice score on chemotherapy for cancer patients among the nursing students
Inferential	Paired 't' test	• To demonstrate the effectiveness of sensitizing program on knowledge on chemotherapy for cancer patients among the nursing students
	Association (χ^2)	• To find the association between selected background variables and level of knowledgeon chemotherapy for cancer patients among the nursing students. • To find the correlation between level of knowledge and practice of nursing students on handling chemotherapy.

Summary

This chapter dealt with the research approach, research design, setting, population and sample, sampling technique, sampling criteria, development of study instruments, reliability and validity of the instruments, pilot study, data collection procedure and plan for data analysis.

CHAPTER IV

ANALYSIS AND INTERPRETATION

The analysis is defined as the method of organizing data in such a way that the research questions can be answered. Interpretation is the process of examining the result and simplification of the findings within a broader context (Polit& Beck, 2016).

This chapter deals with the analysis and interpretation including both descriptive and inferential statistics. Statistics is the field of study concerned with techniques or methods of collection of data, classification, summarization, interpretation, drawing inferences, testing of hypothesis, making recommendations, etc (Mahajan, 2004).

The data was analyzed according to the objectives and hypothesis of the study. Analysis of the study was compiled after all the data was transferred to the master coding sheet. The investigator used descriptive and inferential statistics for analysis. The data were analyzed, tabulated and interpreted using appropriate descriptive and inferential statistics.

Organization of the Findings

The findings of the study were organized and presented under the following headings:

- Frequency and percentage distribution of background variables of nursing students.
- Assessment of pretest and posttest level of knowledge of nursing students on chemotherapy for cancer patients.
- Assessment of level of practice of nursing students on chemotherapy for cancer patients

- Comparison between pretest and posttest knowledge scores regarding chemotherapy for cancer patients among nursing students.
- Frequency and percentage distribution of level of acceptability regarding sensitizing program on chemotherapy for cancer patients among nursing students.
- Association between the selected background variables and level of knowledge regarding chemotherapy for cancer patients among nursing students.
- Association between the selected background variables and level of practice regarding chemotherapy for cancer patients among nursing students.
- Correlation between the knowledge and practice scores of nursing students on chemotherapy for cancer patients.

Table.3: Frequency and Percentage Distribution of Background Variables of Nursing students

(N=97)

Background Variable	f	%
Age		
≤17yrs	-	-
18 – 20 yrs	67	69.1
≥21yrs	30	30.9
Family Income		
<Rs.5000	14	14.4
Rs.5000 -10000	34	35.1
>Rs.10000	49	50.1
Religion		
Hindu	47	48.5
Muslim	4	4.1
Christian	46	47.4
Type of family		
Nuclear	81	83.5
Joint	15	15.5
Extended	1	1
Area of residence		
Urban	52	53.6
Rural	26	26.8
Semi-urban	19	19.6
Medium of Instruction in XII std		

Tamil	25	25.8
English	72	74.2
Others	-	-

Table 3. revealed that majority of the nursing students were in age group of 18-20 years (69.1%), all of them were female (100%), half of them were having above ten thousand rupees of the family income per month (50.1%), most of them belonged to nuclear family (83.5%), more than half of them were from urban area (53.6%) and majority of them scored more than (74.2%)in English medium.

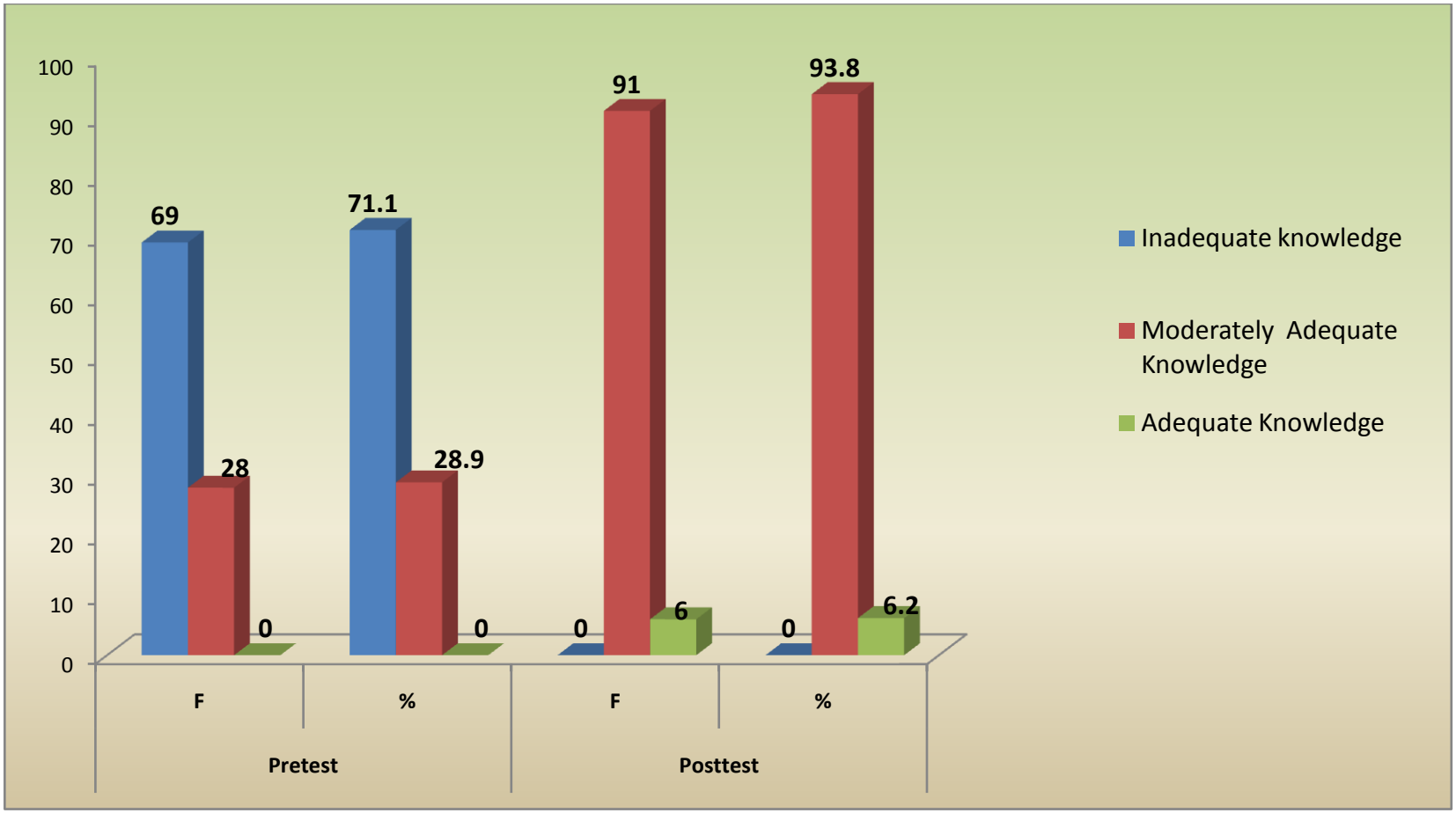


Fig.4. Frequency and Percentage Distribution of Pretest and Posttest level of Knowledge of Nursing Students on Chemotherapy or Cancer Patients

The fig 4 depicts that, majority of the nursing students had inadequate knowledge regarding chemotherapy in the pretest (71.1%) while posttest assessment results revealed most of them had acquired moderately adequate level of knowledge (93.8%).

Table.4.Comparison of Pretest and Posttest Knowledge Scores of Nursing Students on Chemotherapy for Cancer Patients

(N=97)

Assessment	Pretest		Paired t Value	P Value
	Mean	SD		
Pretest	14.30	2.78	**10.54*** **	**0.001**
Posttest	18.10	1.84		

The above table 4 depicts the mean and standard deviation of the posttest knowledge score regarding chemotherapy for cancer patients (18.10 and 1.84) was high compared to the pretest knowledge score among nursing students (14.3 and 2.78) with t value of 10.54 which was statistically significant at $p<0.001$ level. Hence the null hypotheses **$H_0$1** stating that **"**There will be no significant difference between the pretest and posttest knowledge scores regarding chemotherapy for cancer patients among the nursing students" was rejected.

Table 5. Level of Practice on Chemotherapy by Nursing Students after the Sensitizing Program on Chemotherapy for Cancer Patients

(N = 97)

Criteria	Inadequate		Moderately adequate		Adequate	
	f	%	f	%	f	%
Preparation of Chemotherapy Drugs	-	-	1	1.03	96	98.96
Administration of Chemotherapy	-	-	1	1.03	96	98.96
Monitoring of the patient during Chemotherapy	1	1.03	4	4.12	92	94.84
Disposal of Cytotoxic waste of Chemotherapy	-	-	2	2.06	95	97.9
Nurses Responsibility in handling chemotherapy	1	1.03	12	12.37	84	87.62

The data in Table 5, reveals that the majority of nursing students had adequate level of practice with regard to preparation (98.96%), administration of chemotherapy drugs (98.96%), Monitoring of the chemotherapy patients (94.84%), disposal of cytotoxic waste (97.9%) and in Nurses responsibility in handling chemotherapy (87.62%). The majority of nursing students (78.35%) demonstrated overall, adequate level of practice after the sensitizing program on Chemotherapy.

Table.6. Mean and S.D of Practice Scores of Nursing Students on Chemotherapy for Cancer Patients.

(N = 97)

Categories	Mean	SD
Preparation of Chemotherapy Drugs (0 to 46)	44.08	2.45
Administration of Chemotherapy (0 to 10)	9.57	0.73
Monitoring of the patient on Chemotherapy (0 to 10)	9.33	1.11
Disposal of Cytotoxic waste of Chemotherapy (0 to 10)	9.43	0.80
Nurses Responsibility in handling chemotherapy (0 to 4)	3.35	0.89

The mentioned table 6, represented that majority of nursing students had very high practice scores with regard to all aspects such as preparation (Mean = 44.08, SD = 2.45), administration (Mean = 9.57, SD = 0.73), monitoring (Mean = 9.33, SD = 1.11), disposal of waste (Mean = 9.43, SD = 0.80) and nursing responsibility in handling chemotherapy (Mean = 3.35, SD = 0.89). The students had very high total practice scores (Mean = 75.77, SD = 3.84) after the sensitizing program on Chemotherapy.

Table 7. Association between the Selected Background Variables of Nursing Students and their level of Knowledge Regarding Chemotherapy for Cancer Patients.

(N=97)

Background Variables		Pretest knowledge				Posttest knowledge			
		≤ Mean	>Mean	Total	Results	≤ Mean	>Mean	Total	Results
Age	≤17yrs	-	-	-	χ^2=0.12	-	-	-	χ^2=0.89
	18 – 20 yrs	41	26	67	df=1	47	20	67	df=1
	≥21yrs	18	12	30	p=0.91	19	11	30	P=0.58
Academic Performance in 12th	≥75%	41	31	72	χ^2=2.20	51	21	72	χ^2=1.10
	60 – 74%	17	06	23	df=2	14	09	23	df=2
	≤59%	01	01	02	p=0.33	01	01	02	p=0.87
Medium of Instruction in XII standard	Tamil	13	12	25	χ^2=1.10	18	07	25	χ^2=0.24
	English	46	26	72	df=1	48	24	72	df=1
	Others	-	-	-	p=0.29	-	-	-	p=0.62

The above table 7 interprets that there were no significant association between selected background variables such as age and medium of education in XII Standard and level of knowledge regarding chemotherapy for cancer patients (p>0.05). Hence the null hypotheses **$H_0$2** stating that "There will be no significant association between background variables and level of knowledge regarding chemotherapy for cancer patients among the nursing students" was retained.

Table 8. Association between the Selected Background Variables of Nursing Students and their level of Practices Regarding Chemotherapy for Cancer Patients.

(N=97)

Background Variables		Posttest knowledge			
		≤ Mean	**>Mean**	**Total**	**Results**
Age	≤17yrs	-	-	-	χ^2=0.155 df=1 P=0.694
	18 – 20 yrs	24	43	67	
	≥21yrs	12	18	30	
Academic Performance in 12th	≥75%	26	46	72	χ^2=3.473 df=2 p=0.176
	60- 74%	08	15	23	
	≤59%	02	0	02	
Medium of Instruction in XII standard	Tamil	08	17	25	χ^2=0.377 df=1 p=0.539
	English	28	44	72	
	Others	-	-	-	

The above table depicts that there were no significant association between the level of practice such as age, medium of education in XII standard and level of practice of nursing students regarding chemotherapy for cancer patients ($p>0.05$). Hence the null hypothesis **H02**stating that "There will be no significant association between the background variables and level of practice of nursing students regarding chemotherapy for cancer patients" was retained.

Table. 9. Frequency and Percentage Distribution of Level of acceptability Scores regarding the Effectiveness of Sensitizing Program on Chemotherapy for Cancer Patients upon the Knowledge of Nursing Students.

(N=97)

Domain	Highly Acceptable		Acceptable		Unacceptable		Highly Unacceptable	
	f	%	f	%	f	%	f	%
Approach of the Researcher	57	95	3	5	-	-	-	-
Sensitizing programme Administration	54	90	6	10	-	-	-	-
Effectiveness of Sensitizing programme	57	95	3	5	-	-	-	-

The data from the above table 9 reveals that most of the nursing students reported high acceptability with regard to the high acceptability with regard to the approach of the researcher(95%), Sensitizing programme administration (90%) and the effectiveness of Sensitizing programme regarding chemotherapy for cancer patients.(95%).

Table.10: Correlation between Posttest level of Knowledge and Practice of Nursing Students on Chemotherapy for Cancer Patients

(N=97)

Variables	Correlation	
	R	**p**
Knowledge vs Practice	**0.006**	**0.951** **N S**

N S Not significant

The data in the table.10 shows there was no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients. Hence the null hypotheses **$H_0$3** stating that "There is no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients" was retained.

CHAPTER V

DISCUSSION

Statement of the Problem

A Pre-experimental Study to Assess the Effectiveness of the Sensitizing Program on Chemotherapy for Cancer Patients upon the Knowledge and Practice of Nursing Students at selected College of Nursing, Chennai.

Objectives of the Study

1. To assess the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
2. To determine the effectiveness of sensitizing program on chemotherapy for cancer patients upon the knowledge and practice of nursing students by comparing their pretest and posttest knowledge and posttest only practice scores.
3. To assess the level of acceptability regarding the sensitizing program on chemotherapy for cancer patients among the nursing students.
4. To find out the association between the selected background variables and the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
5. To find out the correlation between the knowledge and practice of nursing students on chemotherapy for cancer patients.

The conceptual framework for this study is based on “Imogene King’s Goal Attainment Model (1989)”. A pre experimental study of one group pre-test and post-test design was used. The study included 97 Nursing students selected by purposive sampling technique. The present study was conducted at Apollo College of Nursing, Chennai,

Tamil Nadu. The variables of the study were knowledge of nursing students regarding Chemotherapy for cancer patients.

An extensive review of literature and guidance by experts laid foundation to the development of background variable proforma of Nursing students and structured knowledge questionnaire. The data collection tools were validated and reliability was established. The feasibility and research ability was established by the pilot study conducted on 10% of the sample for two weeks. Then data collection for main study was done.

The pretest consists of collecting the background variables, the level of knowledge and practice regarding effectiveness of sensitizing program on chemotherapy for cancer patients among nursing students, from 21st Dec 2017 to 18th Jan 2018by using structured knowledge questionnaire. The Sensitizing programme regarding knowledge and practice on chemotherapy for cancer patients among nursing students was provided as 2 days programme. Then the posttest knowledge and practice was assessed for students, after 7 days of training Programme. The effectiveness was analyzed by using descriptive and inferential statistics.

The discussion is presented under the following headings

- Frequency and percentage distribution of background variables of nursing students.
- Assessment of pretest and posttest level of knowledge of nursing students on chemotherapy for cancer patients.
- Assessment of level of practice of nursing students on chemotherapy for cancer patients

- Comparison between pretest and posttest knowledge scores regarding chemotherapy for cancer patients among nursing students.
- Frequency and percentage distribution of level of acceptability regarding sensitizing program on chemotherapy for cancer patients among nursing students.
- Association between the selected background variables and level of knowledge regarding chemotherapy for cancer patients among nursing students.
- Association between the selected background variables and level of practice regarding chemotherapy for cancer patients among nursing students.
- Correlation between the knowledge and practice scores of nursing students on chemotherapy for cancer patients.

Frequency and percentage distribution of background variables of nursing students.

This study revealed that majority of the nursing students aged between 18-20 years (69.1%) and all of them were females (100%), half of them were having above ten thousand rupees of the family income per month (50.1%), most of them belonged to nuclear family (83.5%), more than half of them were from urban area (53.6%) and majority of them scored more than seventy five percentage and studied in English medium (74.2%).

Comparison between Pretest and Posttest Level of Knowledge on Chemotherapy for Cancer Patients among Nursing Students.

This study revealed majority of the nursing students had inadequate knowledge regarding chemotherapy in the pretest (71.1%) while posttest assessment results revealed most of them had acquired moderately adequate level of knowledge (93.8%).

The findings are congruent with similar study by Lavanya (2017) reported nursing students, 87% had inadequate knowledge, 13% had moderate knowledge and none of them had adequate knowledge regarding chemotherapy. The study concluded that nursing students need sensitizing programme regarding care of Patients with Chemotherapy.

Comparison between mean and Standard Deviation of the Pretest and Posttest Knowledge Regarding Chemotherapy for Cancer Patients among Nursing Students.

The findings of this study revealed that there were no significant association between selected background variables such as age and medium of education in XII standard and level of knowledge regarding chemotherapy for cancer patients any significant association. Hence the null hypotheses **$H_0$1** stating that **"**There will be no significant difference between the pretest and posttest knowledge scores regarding chemotherapy for cancer patients among the nursing students" was rejected.

Similar findings are consistent with descriptive study conducted by Yu HY, et al (2013) among nurses on knowledge of chemotherapy by using a structured questionnaire. The results revealed that there was an overall correct answer rate of 60.9%. Most of the respondents, 63.5%, had a score of less than 70, and 77.3% hoped to undergo more training on chemotherapy. The evidence-based results suggested that nurses have insufficient knowledge about chemotherapy, however, nurses need more education about chemotherapy in nursing school and through in-hospital continuing education.

Mean and Standard deviation of Practice Scores of nursing students on Chemotherapy for Cancer Patients.

Majority of nursing students had very high practice scores with regard to all aspects such as preparation (Mean = 44.08, SD = 2.45), administration (Mean = 9.57, SD = 0.73), monitoring (Mean = 9.33, SD = 1.11), disposal of waste (Mean = 9.43, SD = 0.80) and nursing responsibility in handling chemotherapy (Mean = 3.35, SD = 0.89). The students had very high total practice scores (Mean = 75.77, SD = 3.84) after the sensitizing program on Chemotherapy.

Frequency and Percentage Distribution of level of acceptability regarding sensitizing program on chemotherapy for cancer patients among the nursing students.

Most of the nursing students reported high acceptability with regard to the high acceptability with regard to the approach of the researcher(95%), Sensitizing programme administration (90%) and the effectiveness of Sensitizing programme regarding chemotherapy for cancer patients.(95%).

Association between the Selected Background Variables of Nursing Students and their level of Knowledge Regarding Chemotherapy for Cancer Patients.

This study interprets that there were no significant association between selected background variables such as age and medium of education in XII standard and level of knowledge regarding chemotherapy for cancer patients any significant association. Hence the null hypotheses **$H_0$2** stating that "There will be no significant association between background variables and level of knowledge regarding chemotherapy for cancer patients among the nursing students" was accepted.

Similar findings were reported by Virinder Singh Chowdhary (2016) to assess the knowledge on staff nurses from cancer hospitals of Punjab. The results revealed that mean score of staff nurses knowledge was average 14.94. Nurses appear to have average knowledge and a positive attitude towards nursing care of cancer patients undergoing chemotherapy. There was no association between knowledge and attitude with their selected socio-background variables.

Association between the Selected Background Variables of Nursing Students and their level of Practices Regarding Chemotherapy for Cancer Patients.

This study interprets that there were no significant association between the level of practice such as age, medium of education in XII standard and level of practice of nursing students regarding chemotherapy for cancer patients ($p>0.05$). Hence the null hypothesis **H02** stating that "There will be no significant association between the background variables and level of practice of nursing students regarding chemotherapy for cancer patients" was retained.

Correlation between Posttest level of Knowledge and Practice of Nursing Students on Chemotherapy for Cancer Patients

There was no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients. Hence the null hypotheses **$H_0$3** stating that "There is no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients" was retained.

Summary

This chapter has dealt with the discussion of the findings in the present study which includes background variables and knowledge questionnaire and level of acceptability checklist to assess the Effectiveness of sensitizing training program on Chemotherapy for Cancer Patients upon the Knowledge and Practice of Nursing Students. Association between the background variables and level of pretest and posttest knowledge and practice among nursing students.

CHAPTER VI

SUMMARY, CONCLUSION, NURSING IMPLICATIONS AND RECOMMENDATIONS

This is the most creative and demanding part of the study. This chapter gives a brief account of the present study and provides conclusions drawn from the findings, recommendations, limitations of the study, suggestions for the study and nursing implications.

Summary

The main aim of this study was to assess the effectiveness of sensitizing programme regarding knowledge and practice of nursing students on chemotherapy for cancer patients.

Objectives of the study were

1. To assess the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
2. To determine the effectiveness of sensitizing program on chemotherapy for cancer patients upon the knowledge and practice of nursing students by comparing their pretest and posttest knowledge and practice scores.
3. To assess the level of acceptability regarding the sensitizing program on chemotherapy for cancer patients among the nursing students.
4. To find out the association between the selected background variables and the pretest and posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients.
5. To find out the correlation between the knowledge and practice of nursing students on chemotherapy for cancer patients.

Null Hypotheses

$H_0$1: There will be no significant difference between the pretest and posttest knowledge and practice scores of nursing students on chemotherapy for cancer patients.

$H_0$2: There will be no significant association between background variables and level of knowledge and practice of nursing students on chemotherapy for cancer patients.

$H_0$3: There will be no significant correlation between the posttest knowledge and practice of nursing students on chemotherapy for cancer patients.

Major findings of the study were Frequency and percentage distribution of background variables of nursing Students

In this study majority of the nursing students aged between 18-20 years (69.1%) and all of them were female (100%), half of them were having above ten thousand rupees of the family income per month (50.1%), most of them belonged to nuclear family (83.5%), more than half of them were from urban area (53.6%) and majority of them scored (74.2%) and studied in English medium.

Comparison between Pretest and Posttest Level of Knowledge on Chemotherapy for Cancer Patients among Nursing Students.

Majority of the nursing students had inadequate knowledge regarding chemotherapy in the pretest (71.1%) while posttest assessment results revealed most of them had acquired moderately adequate level of knowledge (93.8%).

Comparison between the Mean and Standard deviation of Pretest and Posttest Knowledge Scores of nursing students on Chemotherapy for Cancer Patients Students.

The mean and standard deviation of the posttest knowledge score regarding chemotherapy for cancer patients (Mean=18.10 SD=1.84) was high compared to the pretest knowledge score (Mean =14.30 SD= 2.78) with t = 10.54 significant at $p<0.001$ among nursing students. Hence the null hypotheses **$H_0$1** stating that **"**There will be no significant difference between the pretest and posttest knowledge scores regarding chemotherapy for cancer patients among the nursing students" was rejected.

Mean and Standard deviation of Practice Scores of nursing students on Chemotherapy for Cancer Patients .Students.

Majority of nursing students had very high practice scores with regard to all aspects such as preparation (Mean = 44.08, SD = 2.45), administration (Mean = 9.57, SD = 0.73), monitoring (Mean = 9.33, SD = 1.11), disposal of waste (Mean = 9.43, SD = 0.80) and nursing responsibility in handling chemotherapy (Mean = 3.35, SD = 0.89). The students had very high total practice scores (Mean = 75.77, SD = 3.84) after the sensitizing program on Chemotherapy.

Frequency and Percentage Distribution of Level of acceptability regarding sensitizing program on chemotherapy for cancer patients among the nursing students.

Most of the nursing students reported high acceptability with regard to the high acceptability with regard to the approach of the researcher(95%), Sensitizing programme administration (90%) and the effectiveness of Sensitizing programme regarding chemotherapy for cancer patients.(95%).

Association between the Selected Background Variables of Nursing Students and their level of Knowledge Regarding Chemotherapy for Cancer Patients.

This study interprets that there were no significant association between selected background variables such as age and medium of education in XII standard and level of knowledge regarding chemotherapy for cancer patients any significant association. Hence the null hypotheses **$H_0$2** stating that "There will be no significant association between background variables and level of knowledge regarding chemotherapy for cancer patients among the nursing students" was accepted.

Association between the Selected Background Variables of Nursing Students and their level of Knowledge Regarding Chemotherapy for Cancer Patients.

The findings revealed that there were no significant association between selected background variables such as age, gender, educational qualification and medium of education.

Association between the Selected Background Variables of Nursing Students and their level of Practices Regarding Chemotherapy for Cancer Patients.

This study interprets that there were no significant association between the level of practice such as age, medium of education in XII standard and level of practice of nursing students regarding chemotherapy for cancer patients ($p>0.05$). Hence the null hypothesis **H02** stating that "There will be no significant association between the background variables and level of practice of nursing students regarding chemotherapy for cancer patients" was retained.

Correlation between Posttest level of Knowledge and Practice of Nursing Students on Chemotherapy for Cancer Patients

There was no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients. Hence the null hypotheses **H03** stating that "There is no correlation between the posttest level of knowledge and practice of nursing students on chemotherapy for cancer patients" was retained.

Conclusion

Study findings revealed that the sensitizing programme was effective in improving the knowledge and practice of nursing students regarding chemotherapy for cancer patients. It underscores the need for empowering the nursing knowledge and practice by conducting such educational programme. This type of sensitizing program is widely used for evaluation of knowledge and practice among various groups of health care workers. Therefore, in this study the investigator had conducted the sensitizing programme to assess the effectiveness on knowledge and practice regarding the chemotherapy for cancer patients among nursing students.

Implications

The investigator has derived the following implications from the study. These are of vital concern in the field of nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice

Chemotherapy is only one way to treat cancer, may also have surgery, Radiotherapy, or other forms of treatment. Chemo can treat cancer in a specific area or throughout the body. Oncologist will create a treatment plan using specific medications to

be given on a certain schedule to meet treatment goals. Working on these goals with doctor and care team towards chemotherapy for cancer patients nurse must have best knowledge. Hence the nursing students must be prepared with knowledge during their course to be empowered with adequate knowledge to handle the chemotherapy patients.

Nursing Education

The nursing curriculum should also emphasize the nursing education on chemotherapy. Nursing education must focus on new trends and guidelines that will help to enhance nursing care for the cancer patients. The education to the student and staff nurses in the clinical area could in the form of continuing nursing Program evaluate the knowledge on chemotherapy for cancer patients among nursing students.

Nursing administration

Nurse administrators have an important responsibility in organizing continuing nursing education Program and coordination with educational institutions by clinical academic partnership for preparing the nursing students to get specialized knowledge on chemotherapy for cancer patients. Nurse administrator should conduct periodical review to evaluate the knowledge on chemotherapy for cancer patients among nursing students.

Nursing research

There is a need for extensive and intensive research to be conducted in the area. It open an avenue for research on comparison of new guidelines and modified care, clinical pathway and its qualities, advantages, limitations and safe practices, this will further encourage studies on the effectiveness of sensitizing program upon the chemotherapy for cancer patients among nursing students.

Recommendations

The investigator recommends the followings:

- ✓ The same study can be conducted in the different settings.
- ✓ The same study can be conducted ina larger number of samples for selected nurses.
- ✓ The same study can be conducted for nursing students, physicians and other health care workers who are working with cancer patients.
- ✓ The same study can be conducted for the new nurses joining the Oncology set up for improving the knowledge and skills.

Summary

This chapter has dealt with the discussion of the findings in the present study which includes background variables and knowledge questionnaire and level of acceptability checklist to assess the Effectiveness of sensitizing training program on Chemotherapy for Cancer Patients upon the Knowledge and Practice of Nursing Students. Association between the background variables and level of pretest and posttest knowledge and practice among nursing students.

REFERENCES

Al Qadire, M., & Alkhalaileh, M. (2018). Jordanian oncology nurses' knowledge of managing chemotherapy-induced nausea and vomiting. *British Journal of Nursing*, *27*(10), S4-S12.

Binner, M., Ross, D., & Browner, I. (2011, July). Chemotherapy-induced peripheral neuropathy: assessment of oncology nurses' knowledge and practice. In *Oncology nursing forum* (Vol. 38, No. 4).Ashley et al., The Impact Of Nurses Knowledge On Chemotherapy Administration Nursing Essay, Nursing Essays, 2011-36

Bru.G., Nursing Essays on The Impact Of Nurses Knowledge On Chemotherapy Administration, 2004-39

Christina, J., Abigail, W., & Cuthbertson, L. A. (2016). Nurses' Knowledge and Attitudes toward Complementary Therapies for Cancer: A Review of the Literature. *Asia-Pacific journal*

Douglass, A. M., Elder, J., Watson, R., Kallay, T., Kirsh, D., Robb, W. G., ... & Coil, C. J. (2018). A randomized controlled trial on the effect of a double check on the detection of medication errors. *Annals of emergency medicine*, *71*(1), 74-82.

Freeling, M., & Parker, S. (2015). Exploring experienced nurses' attitudes, views and expectations of new graduate nurses: A critical review. *Nurse education today*, *35*(2), e42-e49.*of oncology nursing*, *3*(3), 241.

Gan,., Nursing Essays on "The Impact Of Nurses related to Awareness Programme towards handling Chemotherapy ", published by Pubmed, 2010-43

Gibson,. Nursing Essays on "The Impact Of Nurses related to Knowledge On Chemotherapy Administration", published by Pubmed, 2012-44

Georgia by Jones & Treiber (2010) "When the 5 rights go wrong: medication errors from the nursing perspective" published by Pubmed, Jul-Sep;25(3):240-7

Hammer, K. J., Segal, E. M., Alwan, L., Li, S., Patel, A. M., Tran, M., & Marshall, H. M. (2016). Collaborative practice model for management of pain in patients with cancer. *American Journal of Health-System Pharmacy*, *73*(18), 1434-1441.

Huang, X. Y., Chang, J. Y., Sun, F. K., & Ma, W. F. (2010). Nursing students' experiences of their first encounter with death during clinical practice in Taiwan. *Journal of Clinical Nursing*, *19*(15-16), 2280-2290.

Karlou, C., Papadopoulou, C., Papathanassoglou, E., Lemonidou, C., Vouzavali, F., Zafiropoulou-Koutroubas, A., ... &Patiraki, E. (2018). Nurses' Caring Behaviors Toward Patients Undergoing Chemotherapy in Greece: A Mixed-Methods Study. *Cancer nursing*.

Kinsley, K., & Pritchett, W. (2018). Liposomal Irinotecan: Nursing Considerations in an Outpatient Cancer Center. *Clinical journal of oncology nursing*, *22*(2), 221-224.

Kapucu, S., Özkaraman, A. Ö., Uysal, N., Bagcivan, G., Şeref, F. Ç., &Elöz, A. (2017). Knowledge level on administration of chemotherapy through peripheral and central venous catheter among oncology nurses. *Asia-Pacific journal of oncology nursing*.

Kim et al (2011) ,Nurses' perceptions of medication errors and their contributing factors in South Korea, 2011 , published by Pubmed, April, 19-3.

Larrabee, J. H., & Bolden, L. V. (2001). Defining patient-perceived quality of nursing care. *Journal of nursing care quality*, *16*(1), 34-60., *4*(1), 61.

Larson, P.J. Comparison of cancer patients' and professional nurses' perceptions of important nurse caring behaviours. Heart and Lung, 1987. 16, 187–193.

Manias,. (2007) The Impact Of Nurses Knowledge On Chemotherapy Administration, 2007-52

Mallari, M. S. N., Grace, M., & Joseph, D. (2016). Ethical frameworks for decision-making in nursing practice and research: An integrative review.

Opfer, K. B., et al., Developing Implementing and and documenting chemotherapy orders Nursing Essays, 2008- 59

Maree, J. E., & Potgieter, T. (2018). Palliative chemotherapy: The perspectives and experiences

Niff et al (2009) “Riviews related to Chemotherapy Administration Errors” published by Pubmed, Nursing Essays, 2009-77.

Nirenberg et al., Nursing Essays on The Impact Of Nurses Knowledge On Chemotherapy Administration, 2010-58 of south african nurses. *Asia-Pacific journal of oncology nursing*, *5*(1), 77.

Marshall, V. K. (2018). *Medication Beliefs Among Advanced Cancer Patients Receiving Oral Oncolytic Agents* (Doctoral dissertation, Michigan State University).

Oostendorp, L. J., Ottevanger, P. B., van de Wouw, A. J., Honkoop, A. H., Los, M., van der Graaf, W. T., &Stalmeier, P. F. (2016). Patients’ preferences for information about the benefits and risks of second-line palliative chemotherapy and their oncologist’s awareness of these preferences. *Journal of Cancer Education*, *31*(3), 443-448.

Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Lippincott Williams & Wilkins.

Polovich and Clark (2012), “Structures and processes of care in ambulatory oncology settings and nurse-reported exposure to chemotherapy” Published by the BMJ Publishing Group Limited, volume 21 issue 9

Rossiter, J. C. (2000). Caring in nursing: perceptions of Hong Kong nurses. *Journal of clinical* Regulations about monitoring and assessment of the safety of medicinal products for human use - 25763. Official Gazette. 2005. [Last accessed on 2012 Jan 12]. Available from:http://www.psikofarmakoloji.org/dernek/kanunlar/7.pdf .

Republic of Turkey Official Gazette. Regulations about making amendments in nursing regulations - 27910. 2011. [Last accessed on 2012 Jan 15. Available Sevgisun K et al, (2017). Knowledge Level on Administration of Chemotherapy through Peripheral and Central Venous Catheter among Oncology Nurses. Asia Pac J Oncol Nurs. Jan-Mar; 4(1): 61–68.

Stevenson, A. (Ed.). (2010). Oxford Dictionary of English. Oxford University Press, USA.

Schwappach,.et al, Systematic review of medication safety assessment methods. published by Pubmed, 2011, Feb 1;68(3):227-40.

Timmers, L. et al (2017) Supporting adherence to oral anticancer agents: clinical practice and clues to improve care provided by physicians, nurse practitioners, nurses and pharmacists. BMC cancer Feb 10, 17 (1).

Turkey, Rizalar,. et al, (2012) "Nurses' protective measures during chemotherapy preparation and administration in Turkey", International Journal of Nursing Practice, Jan-2012, 91-98

Virindersinghchowdhary, A Study to Assess the Effectiveness of Structured Teaching Program on Knowledge Regarding" Home Management of Side Effects of Chemotherapy" among Parents October 16, 2017.

Ravinder Kaur,.(2011)A Study to Assess the Effectiveness of Structured Teaching Program on Knowledge Regarding "Home Management of Side Effects of Chemotherapy" among Parents" Published Date: Oct 16, 2017.

Radwin, L., & Alster, K.(2000) Outcomes of perceived quality nursing care reported by oncology patients. Scholarly Inquiry for Nursing Practice 13, 327–342

Von Essen, L., &Sjödén, P. O. (1991). The importance of nurse caring behaviors as perceived by Swedish hospital patients and nursing staff. *International Journal of Nursing Studies, 28*(3), 267-281.

Warren, J. L., Mariotto, A. B., Meekins, A., Topor, M., & Brown, M. L. (2008). Current and future utilization of services from medical oncologists. *Journal of Clinical Oncology*, *26*(19), 3242-3247.

Yu, H. Y., Yu, S., Chen, I. J., & Wang, K. W. K. (2013). Evaluating Nurses' Knowledge of Patients Undergoing Chemotherapy in Greece: A Mixed-Methods Study. cancer Nurs 2018 Mar 13.

APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

18.11.2017

From

Ms.Muthuram.G
M.Sc (N) II year
Apollo College of Nursing
Chennai – 600 095

To

The Principal
Apollo College of Nursing
Chennai - 95

Respected Madam,

Sub: To request permission for research study -Reg.

Greetings! As part of the curriculum requirement our 2nd year M.Sc (N) student Ms.Muthuram.G has selected the following title for her research study.

" A pre experimental study to assess the effectiveness of sensitizing programme on chemotherapy for cancer patients upon the knowledge and practice of nursing students at selected College of Nursing, Chennai."

So I kindly request your good selves to permit her to conduct study in your esteemed institution.

Thanking you,

Ms.Muthuram.G

APPENDIX II

LETTER PERMITTING TO CONDUCT THE STUDY

18.11.2017

From

Ms.Muthuram.G
M.Sc (N) II year
Apollo College of Nursing
Chennai – 600 095

To

The Principal
Apollo College of Nursing
Chennai - 95

Respected Madam,

Sub: To request permission for research study -Reg.

Greetings! As part of the curriculum requirement our 2nd year M.Sc (N) student Ms.Muthuram.G has selected the following title for her research study.

" A pre experimental study to assess the effectiveness of sensitizing programme on chemotherapy for cancer patients upon the knowledge and practice of nursing students at selected College of Nursing, Chennai."

So I kindly request your good selves to permit her to conduct study in your esteemed institution.

Thanking you,

Ms.Muthuram.G

APPENDIX III

ETHICAL COMMITTEE PERMITTING LETTER

INSTITUTIONAL ETHICS COMMITTEE
Apollo College of Nursing, Apollo Hospitals, Chennai
Reg. No.: ECR / 1002 / Inst / TN2017

8th June 2018

To

Ms. G. MUTHURAM
3/15, Shri Meenakshi Avenue,
1st Street, Old Perugalthur (Post),
Chennai – 600 063.

Dear Muthuram,

Ref.: Your Research Topic: "EFFECTIVENESS OF SENSITIZING PROGRAMME ON CHEMOTHERAPY FOR CANCER PATIENTS UPON THE KNOWLEDGE AND PRACTICE OF NURSING STUDENTS AT SELECTED COLLEGE OF NURSING, CHENNAI"

The Institutional Ethics Committee has received the above said research proposal document submitted by you related to the conduct of the above referenced study.

The Institutional Ethics Committee, Apollo College of Nursing, Apollo Hospitals, Chennai reviewed and discussed the research proposal submitted by you during the IEC meeting held on 6th June 2018.

The following Institutional Ethics Committee members were present at the meeting held on 6th June 2018 at 3.00pm at our Senate Hall, Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095.

...2

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095, Tamilnadu, India.
Tel.: + 91 – 44 – 265 34 387, Fax : +91 – 44 – 265 34 923, Email : apollocollegeofnursing@gmail.com

NAME	SEX	DESIGNATION	AFFILIATION	POSITION IN THE COMMITTEE
Dr. Janani Sankar	F	Senior Consultant	Kanchi Kamakoti Child Trust Hospital, Chennai	Chair Person
Dr. Latha Venkatesan	F	Principal	Apollo College of Nursing, Chennai	Member Secretary
Dr. K. Raman	M	Associate Professor	Saveetha Medical College, Chennai	Clinician
Dr. Nirumal Rakkesh	M	Clinical Pharmacologist	Apollo Hospitals, Chennai	Basic Medical Scientist
Mr. Kirubanandam .S.N	M	Advocate	High Court, Chennai	Legal Expert
Dr. Shuba Kumar	M	Director	Samarth, NGO	Social Scientist
Dr. Ganesh N.R	M	Incharge Emerg. Medicine	Apollo Specialty Hospital, Chennai	Scientific Member
Dr. Vijayalakshmi .K	F	Professor	Apollo College of Nursing, Chennai	Scientific Member
Mrs. Krupa .M	F	Consultant Speech Therapist	Vasantham School & home for Special Needs	Scientific Member
Dr. Balasubramanian .NK	M	Statistician	Apollo College of Nursing, Chennai	Member
Mr. Mayilvahanan	M	Principal	UCCK School, Chennai	Lay Person
Mr. Jeba Singh .S	M	Pastor & Theologist	Vision Assembly, Chennai	Theologian

The Institutional Ethics Committee reviewed the proposal, its methodology and design of the study, The proposed thesis work can be started in the presented form without any modifications.

The Institutional Ethics Committee review and approval of the report is only to meet the academic requirement and will not amount to any approval of the conclusions/recommendations as conclusive, deserving adoption and implementation, in any form, in any health care institution. This is subjected to the conditions noted there on and such other conditions as may be prescribed.

The Institutional Ethics Committee studies is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

With Regards,

Dr. LATHA VENKATESAN
Member Secretary

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai – 600 095, Tamilnadu, India.
Tel.: + 91 – 44 – 265 34 387, Fax : +91 – 44 – 265 34 923, Email : apollocollegeofnursing@gmail.com

APPENDIX IV

ORIGINALITY PLAGIARISM REPORT

Plagiarism Detector – Originality Report

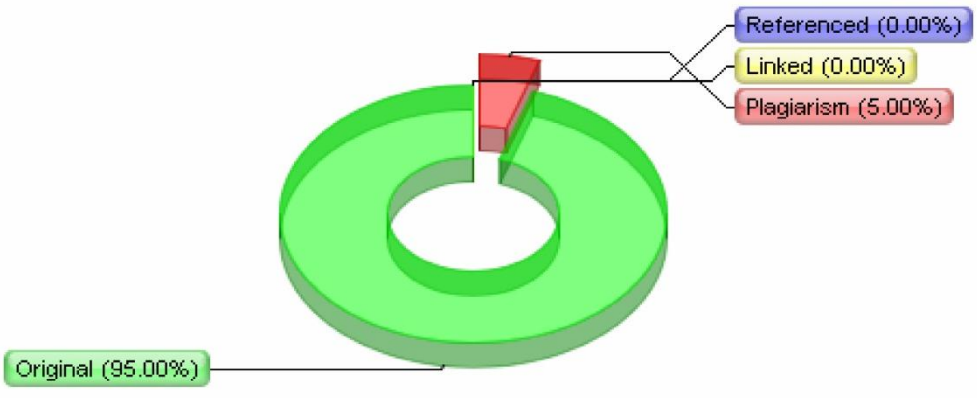
Plagiarism Detector project: [http:// plagiarism-detector.com] Application core version : 622

Originality Report Details

Generation Date and Time:	06/08/2018 09:32:46 PM
Document Name:	MUTHURAM .G THESIS.docx
Document Location:	C:\Documents and Settings\universe computers\Desktop\ MUTHURAM .G THESIS.docx
Document Words count:	13910

Important Hint: to understand what exactly is meant by any report value – you can click "Help Image" . It will navigate you to the most detailed explanation at our web site.

Plagiarism Detection Chart



Referenced - 0% / Linked - 0%

Original – 95% / Plagiarism - 5%

APPENDIX V

LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From
Ms. G. Muthuram
M.Sc., (Nursing) II Year,
Apollo College of Nursing,
Chennai-95.

To
Forwarded through :
Dr. Latha Venkatesan,
Principal,
Apollo College of Nursing.
Chennai-95

Respected Sir / Madam,

I am a post graduate student of the Apollo College of Nursing, Chennai, I have selected the following topic for my research project, to be submitted to The Tamilnadu Dr. M.G.R. Medical University, Chennai, in partial fulfillment of university requirement for award of M.Sc Nursing.

"A Pre Experimental Study to Assess the Effectiveness of Sensitizing Programme on Chemotherapy for Cancer Patients Upon the Knowledge of Nursing Students at Selected Nursing College in Chennai"

I will be privileged to have your valuable suggestions with regards to the establishment of content validity of the tool. I kindly request you to validate my research tool and give suggestions about the same. I would be highly obliged and remain thankful for your great help for validating my tool.

Thanking You.

Place: Yours sincerely
Date: G Muthuram

APPENDIX VI

LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Dr. Latha Venkatesan,**

   M.Sc (N)., M.Phil (N)., Ph.D. (N)., Ph.D (HDFS)., MBA (HM).,

   Principal cum Professor,

   Apollo college of Nursing,

   Chennai-95.

2. **Dr. A. Lizy Sonia,**

   M.Sc(N)., Ph.D., (N)

   Vice Principle and Head of Medical Surgical Nursing Department,

   Apollo college of Nursing,

   Chennai-95.

3. **Dr.Naveen**

   MD. (Internal Medicine), DM (Medical Oncology)

   Consultant Medical Oncologist

   Apollo Cancer Instututes,

   Chennai-600035

4. **Prof . Jaslina Gnanarani**

   M.Sc.(N),

   Professor,

   Medical Surgical Nursing Department,

   Apollo College of Nursing,

   Chennai-95.

5. **Prof. K. Vijayalakshmi,**

   M.Sc (N)., M.A (Psy), MBA, Ph.D. (N).,

   Research Coordinator,

   Apollo College of Nursing

   Chennai-600095

6. **Mrs. D. Sasikala**

   M.Sc (N),

   Reader,

   Medical Surgical Nursing Department,

   Apollo College of Nursing,

   Chennai-600095

7. **Mrs. Kanchana,**

   M.Sc. (N),

   Associate Professor,

   Medical Surgical Nursing Department,

   Apollo College of Nursing,

   Chennai-600095

APPENDIX VII

RESEARCH PARTICIPANT CONSENT FORM

Dear Participant,

I am G Muthuram M.Sc. Nursing II year student of Apollo College of Nursing, Chennai. As a part of my study, I have selected a Research Project on **"A Pre Experimental Study to Assess the Effectiveness of Sensitizing Programme on Chemotherapy for Cancer Patients Upon the Knowledge and practice of Nursing Students at Selected Nursing College in Chennai".** I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

Signature of the Researcher

APPENDIX VIII

CERTIFICATE FOR ENGLISH EDITING

This is to certify that the dissertation **"A Pre Experimental Study to Assess the Effectiveness of the Sensitizing Programme Regarding Chemotherapy for Cancer Patients Upon Knowledge of Nursing Students at Selected Nursing College in Chennai"** by Ms G Muthuram M.Sc. Nursing II year student of Apollo College of Nursing,Chennai was edited for English language appropriateness.

29/7/18.

Signature

MERVIN DANY .K, M.A.,B.Ed.,
P.G. ASST (ENGLISH)
Marwar Govt. Boys. Hr. Sec. Scho...
Acharapakkam, Kanchipuram (Dt).

APPENDIX IX

BLUE PRINT FOR ASSESSMENT OF KNOWLEDGE OF NURSING STUDENTS ON CHEMOTHERAPY FOR CANCER PATIENTS

S.NO	CONTENT	TEMS	TOTAL	PERCENTAGE
1	Review on Basics of Cancer	1,2,3,4,5,6	6	20.01
2	Management of chemotherapy	7,8,9,10,11,12,13,14,15,16, 17,18,19	13	43.33
3	Complications	20,21,22,23,24,25,26,27,28,29,30	11	36.66
	Total	30		100%

DEMOGRAPHIC VARIABLE PROFORMA OF NURSES

Purpose

This proforma is used to measure the demographic variables such as age, monthly income, religion, type of family, area of residence, academic performance, medium of instruction and state.

Instructions

Please put tick mark in the following options. Please be frank in answering.

Sample no: ☐

1. Age in years

1.1 17 years and below ☐

1.2 18-20 years ☐

1.3 21 years and above ☐

2. Monthly Family Income

2.1 Below Rs.5000 ☐

2.2 Rs. 5000- Rs.10000 ☐

2.3 Above Rs.10,000 ☐

3. Religion

3.1 Hindu ☐

3.2 Muslim ☐

3.3 Christian ☐

3.4 Others [specify] ☐

4. Type of the Family

4.1 Nuclear ☐

4.2 Joint ☐

4.3 Extended ☐

5. Area of Residence

5.1 Urban ☐

5.2 Rural ☐

5.3 Semi-urban ☐

6. Academic Performance (upto 12th) in percentage

6.1 75 % and above ☐

6.2 60 – 74 % ☐

6.3 59% and below ☐

7. Medium of Instruction (upto 12th)

7.1 Tamil ☐

7.2 English ☐

7.3 Others ☐

APPENDIX X

STRUCTURED KNOWLEDGE QUESTIONNAIRE ON SENSITIZING PROGRAM REGARDING CHEMOTHERAPY FOR CANCER PATIENTS

Purpose:

The structured interview schedule is used to collect information from nurses regarding chemotherapy.

Instruction:

Read the following items carefully and select one correct response by placing appropriate tick mark on the choice selected. Please be frank in answering. It will be kept confidential and anonymity will be maintained.

1. What is the use of chemotherapeutic agent ?

   a) Treating infection ☐
   b) Treating malignancies
   c) To relieve pain
   d) Suppress edema

2. What are the routes of exposure of chemotherapy drugs ? ☐

   a) Injection
   b) Absorption through mucous membrane
   c) Ingestion
   d) All of the above

3. How to mix the Chemo drugs in order to prevent unwanted exposure? ☐

   a) Above the eye level
   b) Below the eye level
   c) At any level

d) At neutral

4. What colour bags are used to dispense the chemo drugs from the pharmacy ? ☐

a) Brown colour bag

b) Yellow colour bag with red sticker

c) White colour bag with red sticker

d) Red colour bag

5. How many person need to counter check the chemo drug before administering to the patient? ☐

a) Only one

b) Two nurses

c) One nurse and two pharmacist

d) Two nurse and pharmacist

6. Which among the following method is considered safest in preparing chemotherapeutic agent? ☐

a) Wearing PPE

b) Mixing in preparation room

c) Mixing under laminar hood

d) Mixing at the bedside

7. How will you ensure the patency of Intravenous line before the administration of chemo drug? ☐

a) Flushing the line with heparin

b) Watch for the backflow and show to the attendant

c) Presence of blood in the IV line

d) Watch for the signs of phlebitis

8. What should be the nurse's first response, if the patient complaints of breathing difficulty, hot flush & chest pain immediately after administration of chemo drug?

a) Inform the doctor ☐

b) Keep the crash cart nearby

c) Document the allergic reaction

d) Stop the medicine, check vitals & inform physician

9. When administering chemo drugs if the nurse finds that the IV tubing is leaking, what measures to be taken the immediately? ☐

a) Stop the drug & apply plaster in the leaking area

b) Inform patient that it is only small amount nothing to worry

c) Stop the drug, clamp the line & change the IV tubing after wearing PPE

d) Consult doctor

10. What is meant by Extravasation? ☐

a) Seeping of chemo drugs into surrounding tissues

b) Drug spillage

c) Disposal of the drug

d) Side effects of the drug

11. How the cytotoxic waste is generated? ☐

a) From antiemetic drug

b) From antineoplastic drug

c) From anti-inflammatory drug

d) From antispasmodic drug

12. What is the ideal bin to dispose chemo drug? ☐

a) Waterproof metal bin

b) Blue & red coloured bin

c) Puncture proof bin

d) Yellow coloured bin

13. Who should handle the cytotoxic drugs? ☐

a) Specially trained nurse

b) Registered nurse

c) Only charge nurse

d) Only doctors

14. Which of the following is the acute symptom of chemotherapy? ☐

a) Organ toxicity

b) Cardiogenicity

c) Genotoxicity

d) Nausea, vomiting & hair loss

15. Which among the following is called as benign tumor of lymph vessels?

a) Lymphangio sarcoma

b) Lymphosarcoma

c) Lymphangioma

d) Lymhadenitis

16. Which is the common drug given through Intrathecal route? ☐

a) Methotrexate

b) Vincristine

c) Vinblastin

d) Doxorubicin

17. What is the main toxic effect of cyclophosphamide? ☐

a) Renal toxicity

b) Cardiac toxicity

c) Hemorrhagic cystitis

d) Pancreatitis

18. Which electrolyte changes will not occur in Tumor lysis syndrome?

a) High potassium

b) High calcium

c) High uric acid

d) High phosphate

19. When the platelet count is less than 50,000 /cmm, nursing intervention for the patient should include

a) Avoid shaving

b) Inform doctor & transfuse as per order

c) Use soft brush

d) All the above

20. What basic investigations to be done before administration of any kind of anti -tumor antibiotics ?

a) Lipid profile

b) Serum osmolality

c) Liver function test

d) ECG & Echocardiogram

21. Which cancer is highly suspected to be caused by Epstein bar virus

a) kaposi's sarcoma

b) burkitt's lymphoma

c) cervical cancer

d) Gastric malignancy

22. Obesity is a risk factor for which of the following types of cancer?

a) renal

b) endometrial

c) esophageal adenocarcinoma

d) all of the above

23. When staging and grading neoplasm TNM system is used. TNM stands for:

a) Time, neoplasm, mode of growth

b) Tumor, node, metastasis

c) Tumor, neoplasm, mode of growth

d) Time, node, metastasis

24. Which one of the following is the tumor marker for Ca Liver

a) Ca 125

b) AFP

c) Ca 19.9

d) PSA

25. Which of the following drug should be administered to a client on chemotherapy to prevent nausea and vomiting?

a) Metochlopramide (Metozol)

b) Succimer (Chemet)

c) Anastrazole (Arimidex)

d) Busulfan (Myleran)

26. What type of infection cancer patients are more likely to develop due to immuno suppression?

a) Systemic infection

b) Oral yeast infection

c) Mucositis

d) Gastritis

27. Which one of the following is the less common but more serious side effect of chemotherapy

a) Nerve & muscle problems

b) Decrease in blood cell count

c) Heart problems

d) Weight changes

28. When educating the patients with diarrhoea which one of the following advise that the nurse should not encourage the patient to do

a) To avoid eating foods that are high in sodium

b) To avoid high-fat, fried, greasy, & rich foods

c) To limit milk & milk products

d) To eat foods that have a lot of potassium

29. Which type of skin cancer involves the important riskfactor of episodic acute overexposure to ultraviolet (UV) radiation (ie, sunburn)?

a) Squamous cell carcinoma

b) Basal cell carcinoma

c) Melanoma

d) Both b & d

30. Which one of the following is considered to be the primary treatment for regionally advanced head and neck cancer ?

a) Surgery

b) Radiation therapy

c) Chemoradiation therapy

d) Chemotherapy

Answer key

Question	Answer	Question	Answer
1	b	16	a
2	d	17	c
3	b	18	b
4	c	19	d
5	b	20	d
6	c	21	b
7	b	22	d
8	d	23	b
9	c	24	b
10	a	25	a
11	b	26	b
12	b	27	c
13	a	28	a
14	d	29	d
15	c	30	c

Blue Print for Observation Checklist to Assess the Practice of Chemotherapy of the Nursing Students

S.No	Items	Question no	No of Items	Percentage
1	Preparation of Chemotherapy drugs.	1-23	23	57.5%
2	Administration of Chemotherapy drugs	24-28	5	12.5%
3	Monitoring of Patient on Chemotherapy	29-33	5	12.5%
4	Disposal of Cytotoxic waste	34-38	5	12.5%
5.	Nursing Responsibility in handling chemotherapy	39-40	2	5%
	Total		40	100%

Observation Checklist to Assess the Level of Practice on Chemotherapy by Nursing Students

Purpose:

This checklist is developed by investigator, used to assess the practice of nursing student on chemotherapy that includes preparation, administration, monitoring, disposal of chemo waste and nursing responsibility.

Instruction:

This checklist consists of 40 items, scoring ranges from performed, partially performed and not performed, filled by the investigator on observing by the practice of nursing students the sub items a **(✓)** tick mark will be recorded in the column.

S.No	Steps	Performed (2)	Partially Performed	Not performed (0)
1.	Checks the physician's written order			
2.	Confirms the patient's consent and premedication for chemotherapy prior to the preparation of drug			
3.	Wears the Personal Protective Equipment (Gown, mask and gloves)			
4.	Switches on the main switch of the bio safety cabinet and confirms it's function			
5.	Switches on the UV light. Wait for 5 minutes. Switches off the UV light			
6.	Prepares the label of the drug dilution			
7.	Arranges the drugs and diluting IV fluid in the preparation tray			
8.	Checks on the negative pressure of biosafety cabinet			
9.	Keeps the preparation tray with the necessary articles in the inlet of the cabinet			
10.	Inserts both the gloved hands in to the gloves of the biosafety cabinet			
11.	Takes the preparation tray from the inlet by opening the door from inside, in to the biosafety cabinet			
12.	Removes the cap of chemotherapy drug vial			
13.	Takes the 10 ml of normal saline in a syringe			
14.	Injects the diluent into the chemo drug vial			
15.	Shakes it well in between the palms to ensure the thorough mixing of the drug			
16.	Aspirates the mixed chemo drug in to the syringe			
17.	Reinjects the mixed chemo drug in to the prescribed IV fluids .			

18.	Shakes gently the pouch or bottle to ensure thorough mixing of drug			
19.	Sticks the prepared label on the bottle or pouch			
20.	Keeps the prepared chemo drug with tray in the outlet of the cabinet			
21.	Removes the hand from the gloves			
22.	Switches off the cabinet			
23.	Removes the prepared tray from the cabinet and take to bedside			
24.	Explains the procedure to the patient			
25.	Checks the IV line patency and base line vitals			
26.	Checks the drug dilution for strength, dose and duration			
27.	Use of appropriate Personal Protective Equipment (mask, glove and apron)			
28.	Checks the patency of line Connects the medication by following aseptic technique			
29.	Assesses Base line vitals			
30.	Observes the IV site for pain, discoloration or swelling			
31.	Monitors the oxygen Saturation level			
32.	Checks for allergies, discomfort / any other difficulties			
33.	Checks for infusion flow for drip rate / flow rate			
34.	Segregates the waste			
35.	Disposes the waste in appropriate Bins			
36.	Transports the used chemotherapy material			
37.	Manages spillage of chemo agents by appropriate cleaning			
38.	Disposes the patient's body fluids appropriately			
39.	Endorses in the Nurses chart regarding - patient condition - completion time of infusion - side effects of the drugs - health education			
40.	Reports to physician			

Scoring key

Performed -2 Partially Performed -1 Not Performed ss- 0

The total score is converted into percentage and graded as given below

Scoring Interpretation:

Adequate practice : >75%

Moderate practice : 50% -75%

Inadequate practice : <50%

Rating Scale on the Level of Acceptability of Sensitizing Program Regarding Chemotherapy For Cancer Patients among Nurses

Purpose:

The rating scale is used by the investigator to assess the level of acceptability among experimental group of nurses regarding Sensitization programme and its effectiveness.

Instruction:

The rating scale consists of 10 items. Kindly read and give your responses freely and frankly and the responses will be confidential. The responses range from highly acceptabile to highly unacceptabile.

S. No	ITEMS	Highly Acceptable (4)	Acceptable (3)	Unacceptable (2)	Highly unacceptable (1)
1	The prior information about the programme given by the researcher is acceptable				
2	The topic selected for sensitizing programme is acceptable				
3	The explanation regarding sensitizing programme on chemotherapy by the researcher is acceptable				
4	The method of explanation and demonstration on chemotherapy is acceptable				

5	The power point presentation content regarding chemotherapy management of traumatic brain injury is acceptable				
6	The skill of the researcher while explaining and demonstrating steps of chemotherapy is acceptable				
7	The method of evaluation by the researcher is acceptable				
8	The duration of the programme is acceptable				
9	The politeness of the researcher is accepatable				
10	The effectiveness of the programme is acceptable				

APPENDIX XI

LESSON PLAN

CHEMOTHERAPY FOR CANCER PATIENTS

TOPIC	:	CHEMOTHERAPY FOR CANCER PATIENTS
GROUP	:	III YEAR B.Sc. NURSING STUDENTS
PLACE	:	COLLEGE OF NURSING, CHENNAI
DURATION	:	8 HOURS
METHOD OF TEACHING	:	LECTURE CUM DEMONSTRATION
MEDIA OF TEACHING	:	POWER POINT PRESENTATION, DEMONSTRATION BY USING MANIKIN, DISCUSSION,
EDUCATOR	:	G MUTHURAM II YEAR MSC (N) STUDENT, APOLLO COLLEGE OF NURSING, CHENNAI

GENERAL OBJECTIVE

At the end of the session, the Nursing students will gain adequate knowledge regarding chemotherapy for cancer patients and apply the knowledge in clinical situation.

SPECIFIC OBJECTIVES

At the end of the session the Nursing Students will be able to

- outline regarding cancer and chemotherapy
- narrate the basics of chemotherapy
- define cancer and chemotherapy
- list the causes of cancer
- classify the types of cancer
- generalize the classification based on stages of cancer
- enlist the signs and symptoms of cancer
- explain the management of cancer
    - chemotherapy
    - surgical management of chemotherapy

- Radiation therapy
- Drugs used in chemotherapy
- Side effects and protherapy
- Admixture of chemotherapy drugs and personal protective equipment in preparation of chemo drugs
- Administration of chemotherapy

- point out the complications due to chemotherapy

S. No	Time	Specific Objectives	Content	Teaching methods	Evaluation
1	10 min	Outline regarding basics of cancer and chemotherapy	In most people's minds there is no scarier diagnosis than that of cancer. Cancer is often thought of as an untreatable, unbearably painful disease with no cure. However popular this view of cancer may be, it is exaggerated and over-generalized. Cancer is undoubtedly a serious and potentially life-threatening illness. For example, it is the leading cause of death in Americans under the age of 85, and the second leading cause of death in older Americans. There will be 1.5 million new cases of cancer occurring in the United States coming year, and over 570,000 deaths because of it not including basal and squamous skin cancers which are not reported but could add another two million cases per year (ACS, 2010). However, it is a misconception to think that all forms of cancer are untreatable and deadly. The truth of the matter is that there are multiple types of cancer, many of which can today be effectively treated so as to eliminate, reduce or slow the impact of the disease on patients' lives. While a diagnosis of cancer may still leave patients feeling helpless and out of control, in many cases today there is cause for hope rather than hopelessness.	Lecture cum discussion	What do you mean by cancer, chemotherapy?

			Our goal in this section is to educate you on the basics of cancer and cancer treatment. Possessing this knowledge will, we hope, help you to better understand what cancer is, how it occurs, and how to make informed choices about cancer care options. **Chemotherapy** is the use of drugs or medications to treat disease, a method of cancer treatment. The medications enter the body and circulate, seeking to destroy cancer cells. **Chemotherapy** can be used alone or as part of a treatment plan that could include surgery, radiation therapy or biotherapy.		
2	2 min	Narrate the basic terminologies of cancer and chemotherapy	**Basic terminology of cancer and chemotherapy** ▸ **Alopecia**-Hair Loss ▸ **Anaplasia**-Cells That Lack Normal Cellular Characteristics & Differ In Shape & Organization With Respect To Their Cells Of Origin. Usually Anaplastic Cells Are Malignant. ▸ **Biopsy**-A Diagnostic Procedure To Remove A Small Sample Of Tissue To Be Examined Microscopically. ▸ **Brachytherapy**: Delivery Of Radiation Therapy Through Internal Implants	Lecture cum discussion	What are all the terminologies used in cancer and chemotherapy?

			▸ **Cancer**: A Disease Process Whereby Cells Proliferate Abnormally, Ignoring Growth Regulating Signals In The Environment Surrounding The Cells. ▸ **Carcinogenesis**: Process Of Transforming Normal Cells Into Malignant Cells. ▸ **Cytokines**: Substances Produced By Cells Of The Immune System To Enhance Production & Functioning Of Components Of Immune System . ▸ **Dysplasia**: Bizzare Cell Growth Resulting In Cells That Differ In Size, Shape, Or Arrangement From Other Cells Of The Same Type Of Tissue. ▸ **Extravasation**: Leakage Of Medication From The Veins Into The Subcutaneous Tissues. ▸ **Hyperplasia**: Increase In The No. Of Cells Of A Tissue. ▸ **Metaplasia**: Conversion Of One Type Of Mature Cell Into Another Type Of Cell. ▸ **Metastasis**: Spread Of Cancer Cells From The Primary Tumor To Distant Sites. ▸ **Myelosuppression**: Suppression Of The Blood Cell-Producing Function Of The Bonemarrow. ▸ **Nadir**: Lowest Point Of Wbc Depression After Therapy That Has Toxic Effects On		

			The Bonemarrow. ▸ **Neoplasia**: Uncontrolled Cell Growth That Follows No Physiologic Response ▸ **Neutropenia**: Abnormally Low Absolute Neutrophil Count ▸ **Palliation**: Relief Of Symptoms Associated With Cancer. ▸ **Tumor Specific Antigen**: Protein On The Membrane Of The Cancer Cells That Distinguishes Cancer Cells From The Normal Cells. ▸ **Xerostoma:** Dry Oral Cavity Resulting From Decreased Function Of Salivery Glands.		
3	2 min	Defines cancer	An abnormal growth of cells which tend to proliferate in an uncontrolled way and, in some cases, to metastasize (spread). Cancer is not one disease. It is a group of more than 100 different and distinctive diseases. Cancer can involve any tissue of the body and have many different forms in each body area. Most cancers are named for the type of cell or organ in which they start. If a cancer spreads (metastasizes), the new tumor bears the same name as the original (primary) tumor.	Lecture cum discussion	Define Cancer
4	5min	List the causes of cancer	**Causes of Cancer** **Viruses & bacteria**	Lecture cum discussion	What are all the causes of head

			Ex: 1. ebstein bar virus-highly suspect as a cause in burkitt's lymphoma, nasopharyngeal cancer & some type of non-hodgkin's & hodgkin's lymphoma. 2. Hiv-kaposi's sarcoma 3. H.pylori-gastric malignancy. 4. 4. Cmv, hpv, hsv-ii -cancer cervix. **Physical agent:** ➢ exposure to sunlight or radiation. ➢ chronic irritationor inflammation ➢ tobacco use ➢ excessive exposure to uv rays esp in fair skinned, blue or green eyed people. ➢ Exposure to ionizing radiation **Chemical agent**: ➢ alter DNA structure in the tissues. ➢ tobacco smoke.		injury

			➢ smoking is strongly associated with ca lung,head & neck,esophagus,pancreas, ➢ cervix & bladder. ➢ Chewing tobacco-cancer oral cavity. **Genetic & familial factors**: ➢ BRCA 1gene-linked to breast & ovarian cancer syndrome. ➢ BRCA 2 gene-linked to early onset breast cancer. ▸ **Dietary factors:** Dietary substances can be proactive(protective), carcinigenic, or co-carcinogenic. Fat, alcohol, salt-cured or smoked meats, foods containing nitrates & nitrites, and a high Caloric dietary intake. **Food appear to reduce cancer risk:** High fiber foods, cabbage, cauliflower, carotinoids & possibly vit-e,c,zinc & selenium. Obesity is associated with endomatrial cancer & post menopausal breast cancer also-increase the risk for cancer of colon, kidney, & gallbladder.		

<table>
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<td>Hormonal agent:
Hormonal imbalance- endogenous (ca breast, prostrate, uterus)& exogenous (oral contraceptives & prolonged estrogen therapy –hepatocellular, endometrial, & breast cancer).
Carcinogenesis
▸ Initiation
▸ Promotion
▸ Progression</td>
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<tr>
<td>5</td>
<td>5 min</td>
<td>Enlist the types of cancers</td>
<td>Types of Cancer
<table>
<tr><th>TISSUE TYPE</th><th>BENIGN TUMOR</th><th>MALIGNANT TUMOR</th></tr>
<tr><td>EPITHELIAL
1.surface
2.glandular

CONNECTIVE
1.fibrous</td><td>
Papilloma
Adenoma

Fibroma</td><td>
Squamous cell carcinoma
Adeno Carcinoma

Fibrosarcoma</td></tr>
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<td>Lecture cum discussion</td>
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2.adipose	Lipoma	Liposarcoma			
3.cartilage	Chondroma	Chondrosarcoma			
4.bone	Osteoma	Osteosarcoma			
5.blood vessel	Hemangioma	Hemangiosarcoma			
7.**LYMPH VESSEL**	Lymphangioma	Lymphangio Sarcoma			
8.LYMPH TISSUE	-	Lympho Sarcoma			
MUSCLE					
1.smooth	Leiomyoma	Leiomya Sarcoma			
2.striated	Rhabdomyoma	Rhabdo Myosarcoma			
NEURAL TISSUE					
1.nerve cell	Neuroma	Neuro Blastoma			
2.glial tissue	Glioma	Glioblastoma, Astrocytoma, Medulloblastoma, Oligodendroglyoma.			
3.nerve sheaths	Neurilemmoma	Neurilemmalsarcoma			
4.meninges	Meningioma	Meningeal sarcoma.			

			HEMATOLOGIC 1.granulocytic 2.erythrocytic		Myelocytic leukemia. Erythrocytic leukemia		
			3.plasma cells 4.lymphocytic 5.monocytic Endothelial lining		Multiple myeloma Lymphocytic leukemia (lymphoma) Monocytic leukemia Eving's sarcoma		
6	10 min	Generalize the Tumor staging & grading	▸ **Staging**: 'TNM' classification t-tumor n-node(lymph node enlorgement) m-metastasis ▸ **Grading:** obtained through cytology(fnac), biopsy, or surgical excision.			Lecture cum discussion	

			Numerical value - I – iv I-well differentiated tumor Iv-poorly or undifferentiated		
7	10 min	Enumerate the signs and symptoms of Cancer	**change in bowel habits or bladder function** Long-term constipation, diarrhea, or a change in the size of the stool may be a sign of **colon cancer**. Pain when passing urine, blood in the urine, or a change in bladder function (such as needing to pass urine more or less often than usual) could be related to **bladder or prostate cancer.** **<u>Sores that do not heal</u>** Skin cancers may bleed and look like sores that don't heal. A long-lasting sore in the mouth could be an **oral cancer.** **<u>White patches inside the mouth or white spots on the tongue</u>** White patches inside the mouth and white spots on the tongue may be *leukoplakia*.	Lecture cum discussion	

			Leukoplakia is a pre-cancerous area that's caused by frequent irritation. Any long-lasting mouth changes should be checked by a doctor or dentist right away. **<u>Unusual bleeding or discharge</u>** Unusual bleeding can happen in early or advanced cancer. Coughing up blood in the sputum (phlegm) may be a sign of **lung cancer.** Blood in the stool (which can look like very dark or black stool) could be a sign of **colon or rectal cancer.** **Cancer of the cervix or the *endometrium*** (lining of the uterus) can cause abnormal vaginal bleeding. Blood in the urine may be a sign of bladder or kidney cancer. **<u>Thickening or lump in the breast or other parts of the body</u>** Many cancers can be felt through the skin. These cancers occur mostly in the breast, testicle, lymph nodes (glands), and the soft tissues of the body. A lump or thickening may be an early or late sign of cancer and should be reported to a doctor, especially if you've just found it or notice it has grown in size.		

			<u>Recent change in a wart or mole or any new skin change</u> Any wart, mole, or freckle that changes color, size, or shape, or that loses its sharp border should be seen by a doctor right away. Any other skin changes should be reported, too. A skin change may be a melanoma which, if found early, can be treated successfully**.** **<u>Nagging cough or hoarseness</u>** A cough that does not go away may be a sign of lung cancer. Hoarseness can be a sign of **cancer of the voice box (*larynx*) or thyroid gland**.		
6	30 min	Explain the management of cancer	**Surgery-** ▸ Diagnostic-biopsy ▸ Prophylactic-f/h/o breast ca ▸ Surgery as a primary treatment ▸ Palliative ▸ Reconstrutive **Radiation therapy:** ▸ External radiation	Lecture cum discussion and demonstration	

			▶ Internal radiation(brachy therapy) **Chemotherapy:** ▶ Cell cycle specific ▶ Cell cycle non-specific **Newer techniques** ▶ Bone marrow transplantation ▶ cord blood transfusion ▶ Biologic response modifiers: ▶ Monoclonal antibodies,cytokines, interferons, interleukins, ▶ g-csf, gm-csf. ▶ Retinoids-vit-a derivative ▶ Photodynamic therapy/phototherapy. ex-profimer. ▶ Gene therapy.		
7	5 min	List out the	**Classification of Chemo drugs** • **Alkylating agents:** These types of drugs interfere with the way cells work and can kill	Lecture cum	What are the

		classification of chemo drugs	cells in various phases of the cell cycle. • **Antimetabolites:** These drugs affect how a cell functions by replacing natural substances in the *DNA* that cells need to grow. Without these natural substances, cells cannot reproduce and eventually die. • **Plant alkaloids:** These drugs are made from plants. They work by preventing cells from dividing in two. • **Mitotic inhibitors:** These drugs are made from plants and other natural products. They work by preventing cells from dividing. • **Antitumor antibiotic** These drugs prevent cells from reproducing. • **Topoisomerase inhibitors:** These drugs block certain enzymes that cells need to reproduce. All types of chemotherapy drugs cause *side effects*. No matter which one you are taking, you should speak with your doctor and care team about what to expect. Being prepared and knowing how you can help manage *side effects* may help you stay on schedule.	discussion	types of chemo drugs?

8	5 mts	List out the side effects of chemotherapy	common side effects caused by chemotherapy: • Fatigue. • Hair loss. • Easy bruising and bleeding. • Infection. • Anemia (low red blood cell counts) • Nausea and vomiting. • Appetite changes. • constipation • Diarrhea • Mouth, tongue, and throat problems such as sores and pain with swallowing • Nerve and muscle problems such as numbness, tingling, and pain • Skin and nail changes such as dry skin and color change • Urine and bladder changes and kidney problems • Weight changes	Lecture cum discussion	What are the common side effects of chemo drugs?

			• Chemo brain, which can affect concentration and focus • Mood changes • Changes in libido and sexual function • Fertility problems		
9	30 mts	Safe handling of chemotherapy	There have been increasing numbers of reports in the literature describing the possible effects of chemotherapy drugs on health care professionals (Fuchs et al., 1997; Grummt et al., 1993; Selevan et al., 1985; Valanis et al., 1997). It has therefore become imperative that staff is knowledgeable regarding the safe handling of chemotherapy drugs. The risk to health care professionals from handling a hazardous drug stems from its inherent toxicity and the extent to which workers are exposed to the drug. The primary routes of exposure are through direct skin contact and through inhalation of aerosolized drug products. Other potential exposure occurs during the disposal of the drugs, disposal of the items used in drug preparation and administration, and when caring for patients who have received these drugs. • Many types of chemotherapy agents are used to treat a variety of malignancies in	Lecture, discussion and demonstration	What are the PPE used in handling Chemotherapy?

			children and adolescents. • These agents are considered hazardous to individuals who handle them. • Hazardous drugs require special precautions because of their potential health risk. OCCUPATIONAL EXPOSURE RISK • Cardiogenicity, • Geno toxicity, • Organ toxicity, • Adverse reproductive outcomes • Acute symptoms like …. Headache, Dizziness, Fatigue, Hair loss, Nausea, Skin, Eye, Throat infections. Routes of exposure • Injection through needle stick, • ingestion, • directly or through food and beverages, • inhalation of drug aerosols and		List down the occupational risks

			absorption through mucous membranes after direct contact. - Some agents like vesicants can cause severe burns if splashed in the mucous membrane of the eye or accidently injected into tissue. OTHER EXPOSURES LIKE ….. - Contact with leaking tubing or connection sites. - Cytotoxic spills. - Disposing of cytotoxic agents. - Mixing materials. - Handling of body fluids of a patient within 48 hrs after he or she receives chemotherapy. EXPOSURE PREVENTION GUIDELINES • PERSONAL PROTECTIVE EQUIPMENT: • It should be used whenever there is a possibility that cytotoxic agents will be released into the environment. • This includes gloves, gowns, respirators, face mask, eye shield, or goggles. • This can be used in all types of methods, cytotoxic medications while administer.		Explain the prevention guidelines for exposure to chemo drugs

			• Administration includes not only for IV injections and also preparing oral drugs that must be compounded or crushed. • Double gloves are recommended for all hazardous drug handling. • Remember to always work below eye level. • Holding a child for a lumbar puncture, during which intra theacal chemotherapeutic agents will be administered, involues risk for eye exposure. (Eg; cytarabine, methotraxate). LABELING AND STORAGE GUDELINES • [MSDS] must be available for all cyto-toxic medications to provide instruction for care in the event of accidental exposure. • Medications must be labeled clearly for content and hazardous nature. The label should contains….. • Name of the medicine. • Dosage • What type of solution (Ex NS, DNS,D5W). • Duration Signature of the staff. Starting and ending time.		

			PREPARATION AND ADMINISRATION • Nurses responsibility is to see for the doctor's order. • Once the order is given by doctor, the nurse has to check the medicine, dosage whether it has to be given before or not. • Doctor has to write the drug chart and to be signed by him. • Two nurses have to counter check the chart for confirmation. - Before preparing should follow laminar hood usage flow chart… - The nurse should wear face mask, gloves, apron. - Before mixing cost of the medicine has to be explained to patient and attendant. - Keep everything ready and to be prepared only in laminar hood. - 6 Rights to be followed before mixing. - After preparing the medicine to be transported through cytotoxic bag. • Chemo consent to be obtained. • 6 Rights to be followed at the bed side. • Proper labelling to be done.		How will you prepare and administer the drugs?

			• Before starting iv line should be patent. • Explain the name of medicine, dosage, duration,cost of the medicine, side effects to the patient and attender before starting. • The nurse has to wear gloves while administering the medicine. The nurse has to wait for 10-15 mins at the bedside to see for any allergic reaction. • Vital signs to be monitored. • Frequent visiting at the bed side. • Documentation to be done and signature of the staff is must. BODY FLUIDS EXPOSURE GUIDELINES • Skin, Eye, Mucous Membrane Exposures • Remove any contaminated clothing. Wash the area immediately with soap and water. • In case of eye flush the eye immediately with tap water or a saline solution for at least 5 minutes. SPILL MANAGEMENT - Spill kits should be available in all areas where cyto-toxic drugs are stored , prepared,		Explain the spillage management

			transported and administered. - The person who are handling this spillage management should be trained.PPE should be used. HOW TO REMAIN SAFE WHEN USING CHEMOTHEARPY DRUGS? - The certain precautions that need to be taken when receiving chemotherapy. - chemotherapy medicines are passed into the vomit, urine and stool for hours, and sometimes days after receiving chemotherapy. - Fluids must be handled with special care during chemotherapy administration and for a full 48hrs after you or your child has received chemotherapy. • Wear gloves when handling diapers, urinals, kidney tray and soiled sheets • Carry the soiled items away from your body.-Wash hands after the gloves has removed. • Iv drugs On rare occasions, iv tubing may be become loose or disconnecte d • A Nurse should be contacted immediately if a chemotherapy iv line becomes loose or starts to leak. • Clamp the IV line if this happens. Always put on gloves before handling loose or		

			wet chemotherapy iv tubing. • Cover the area with tissue paper and call for an person to clean in that area with the spillage kit. Caution board is must. • Keep people away from the spill area. • If the medicine is spilled over the skin or eyes, immediately wash the area with tap water and seek the medical person as soon as possible. ORAL MEDICATIONS • Oral chemotherapy medicines are given in the form of capsules or tablets. • Always wear gloves when handling these medicines and keep them away from children and pets. • Never open capsules or crush tablets without instructions from your health care provider or pharmacists. • Extra protection is needed when opening and mixing chemotherapy medicines. • Eg; Face mask, Gloves,Apron. • Find a place that is free of air flow [Away from a window or fan] and not in an area where the food is prepared.		

				NAME OF THE TUMOR MARKER	ELEVATED FROM NORMAL VALUE RESULT IN	NORMAL VALUE		List down the tumour markers
			1	CEA (Carcino Embryonic Antigen)	• tumors of the gastrointestinal system • occasional lung and breast cancer	<2.5 ng/ml- non-smoker) <5.0 ng/ml - smoker		
			2	CA125	• ovarian carcinomas	<35 U/ml		
			3	CA19-9	• gastric cancer • pancreatic cancer • colon cancer	<37 U/ml		
			4	PSA-Prostate specific antigen	• Prostate cancer	0 to 4 ng/ml.		
			5	AFP-Alpha fetoprotein	• hepatocellular carcinoma	<6.6ng/ml Or <10 µg/L		
			6	β-HCG – Human chorionic gonadotropin	• trophoblastic neoplasms & • Cancers of breast, lung, and gastrointestinal tract • (occasional)			

		Nursing management of patient after chenotherapy / Neutropenic care	**Assessment**: Assess the following areas thoroughly every shift. • Skin: Check for tenderness, edema, breaks in skin integrity, moisture, drainage, lesions (especially under breasts, axillary skin folds, bony prominences, perineum) Check all puncture sites (eg IV sites) for signs symptoms of inflammation or injection. • Oral Cavity: Check for moisture, lesions, colour (check palate, tongue, buccal mucosa, gums, lips, oro-pharynx) • Respiratory: Check for presence of cough, sore throat. • Gastro Intestinal : Check for abdominal discomfort/ distention, Change in bowel pattern, Auscultate bowel sounds. • Genitourinary : Check for dysuria, urgency, frequency, check urine for color, clarity, odor. • Neurologic: Check for complaints of headache, neck stiffness, visual disturbances, assess conscious level, orientation behavior. • Check Temperature ❖ **Environment and staff:**		

			• Thorough hand hygiene must be done by everyone before entering patient's room each and every time. • Allow no one with a cold or sore throat to care for the patient or to enter room, or come in contact with patient. • Use private room for patient if ANC is < 1000. • Allow no fresh flowers or stagnant water. • Change water in containers every shift. • Ensure room is cleaned daily. ❖ **Dietary:** • Provide low microbial diet • Eliminate fresh salads and unpeeled fresh fruits or vegetables. ❖ **Patient:** • Avoid suppositories, enemas and taking rectal temperature. • Proactive breathing (incentive spirometer every 4hrs while awake). • Ambulate : wear HEPA filter mask if neutropenia is severe. • Prevent skin dryness with water soluble lubricants especially in high risk areas (eg.		

			Lips, corners of mouth, elbows, feet bony prominences) ❖ **Skin care and hygiene:** Provide meticulous total body hygiene • Chlorhexidine bath • Betadine sitz bath twice in a day • Perineal care with betadine and apply Zinc oxide cream twice daily and after each toileting. • Neuosporin powder in groin and axilla. • Fusidine ointment in each nostil thrice daily. ❖ **Mouth care:** • Provide hexidine mouth wash thrice daily and after meals. • Apply candid mouth paint after mouth wash. ❖ **Care of IV lines:** • Inspect IV site every shift, monitor closely for any discomfort, erythema etc. • Follow aseptic techniques for handling the lines. • Change IV tubing daily using aseptic technique.		

			• Change bionectors / clave connectors daily, at least once in 48 hrs. • Clean the ports with alcohol swabs for 30 seconds in circular motion with friction and allow it to dry before accessing the line. • Change the dressing in alternative days (for Hickamn's line weekly once).		
			Conclusion Chemotherapy can prolong survival, palliate disease-related symptoms, and improve quality of life compared with best supportive care in patients with cancer.New targeted agents could provide better treatment options, whether used alone or in combination with standard chemotherapy. Additionally, various prognostic factors are starting to emerge to provide clues as to which patients could be helped by specific agents. Nursing students must have knowledge on chemotherapy for cancer patients as they are the future nurses to take care of the patients.		

APPENDIX XII

DATA CODE SHEET

s.no	Demographic Variable							Pretest Knowledge																												
	Age	Income	Religion	Family	Resi	Marks %	Medium	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	3	3	3	1	1	3	2	1	1	1	0	0	1	1	1	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0
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33	21	3	1	2	1	2	1	0	1	0	1	1	0	1	1	0	1	0	0	1	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0
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37	3	2	3	2	2	1	2	1	0	1	0	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
38	22	2	2	1	1	1	1	1	1	1	0	0	1	0	0	0	1	1	1	0	1	0	0	0	0	1	0	0	0	1	1	0	1	0	0	1	0
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94	3	3	1	2	3	1	1	1	1	1	0	1	1	1	1	1	0	1	0	0	1	1	0	0	1	1	0	1	0	1	1	1	1	0	0
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96	2	2	3	1	3	1	1	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	0	0	0	1
97	2	3	3	1	1	1	2	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0	0	1	1	1	0	0	0	0

		Post Test Knowledge																														
pre score		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**	
12	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0	0	0	0	0	1	1	19	2
15	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	18	2
15	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
13	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	18	2
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16	2	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	0	0	1	1	1	0	0	0	0	1	1	19	2
14	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	19	2
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19	2	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
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13	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
9	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	18	2
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15	1	1	1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	0	0	1	0	0	1	1	1	0	0	1	0	1	1	18	2
18	2	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1	19	2
10	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	1	16	2
16	2	1	1	1	0	0	1	0	1	1	1	1	1	1		1	1	0	1	0	0	0	1	1	1	0	0	0	0	1	1	18	2
15	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	1	1	1	0	1	0	0	0	1	1	19	2
18	2	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0	1	0	0	0	1	1	21	2

12	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	18	2
13	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	0	1	0	0	0	1	1	19	2
16	2	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	0	1	0	0	0	1	1	20	2
14	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	19	2
12	1	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
11	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
16	2	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	0	0	1	0	1	1	18	2
14	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	1	16	2
13	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	0	1	1	0	0	0	0	1	1	16	2
10	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	18	2
14	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	1	1	0	0	0	1	0	1	1	18	2
18	2	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	1	1	0	0	0	0	1	21	2
17	2	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0	0	1	17	2
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10	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	1	1	0	0	0	1	1	18	2
10	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	0	0	0	0	0	1	0	1	0	1	0	1	1	1	17	2
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17	2	1	1	1	1	0	0	0	1	1	1	1	1	0	1	0	0	1	0	0	0	0	1	1	0	0	1	0	0	1	1	16	2
18	2	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
13	1	1	1	1	0	0	1	1	1	1	0	1	1	0	1	1	0	1	0	0	0	0	1	1	1	1	0	0	1	1	1	19	2
16	2	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	1	16	2
10	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	1	0	1	0	0	1	0	1	0	0	1	1	18	2
13	1	1	0	1	0	0	1	0	1		1	1	1	1	1	1	1	1	0	0	1	0	0	1	1	0	0	1	0	1	1	18	2
14	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	0	1	0	22	3
11	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1	0	0	1	0	22	3
8	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	1	0	0	1	1	22	3
14	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	1	1	21	2
8	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	1	0	0	1	1	22	3
14	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	1	1	21	2
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17	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	1	1	21	2
12	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0	1	1	21	2
18	2	1	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	1	1	1	1	0	0	0	1	1	18	2
14	1	0	1	1	0	0	0	1	1	1	1	0	0	1	1	0	1	1	0	0	0	1	1	1	1	0	0	0	0	1	1	16	2
15	1	1	1	0	0	0	1	0	1	1	0	1	1	0	1	1	1	0	0	1	0	0	0	1	1	1	1	0	0	1	1	17	2
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11	1	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	16	2
12	1	1	1	1	0	0	1	0	1	1	0	1	1	1	1	1	0	1	1	0	0	0	1	1	1	0	0	0	0	1	1	18	2
17	2	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	19	2
13	1	0	1	1	0	0	1	1	1	1	1	1	0	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	16	2
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17	2	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	0	1	0	0	0	0	1	1	1	0	1	0	0	1	1	17	2
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13	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
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16	2	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	17	2
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19	2	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	0	1	1	0	0	0	0	1	1	16	2
21	2	1	1	0	1	1	0	1	1	1	0	0	1	1	1	0	1	0	1	0	0	0	1	1	0	0	0	0	1	1	1	17	2
20	2	1	1	0	0	1	0	1	1	1	1	1	0	1	1	1	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	17	2
16	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	17	2

APPENDIX XIII

PHOTOGRAPHS

Sensitizing Programme On Chemotherapy for Cancer Patients

Demonstration on Handling Chemotherapy

Biosafety Cabinet

Checking the IV line Patency